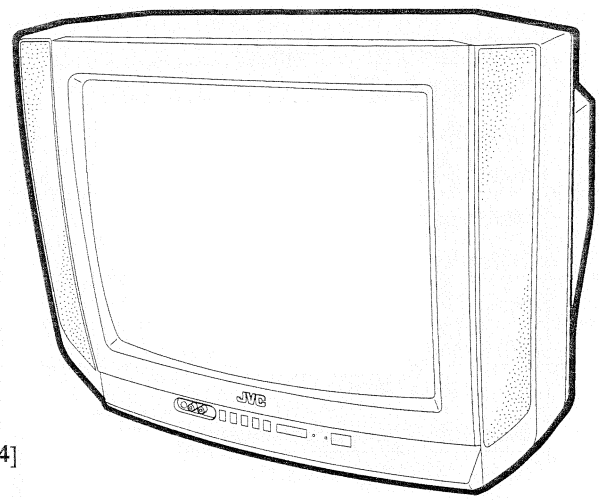
JVC

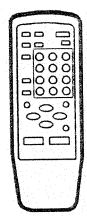
SERVICE MANUAL

COLOUR TELEVISION

BASIC CHASSIS
CG

AV-F21M3
AV-F21M3(-A)
AV-F21T3
AV-F21T3(-A)





[RM-C364]

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No.51643
Oct. 1999

SPECIFICATIONS

Item		Content	
		AV-F21M3 / (-A)	AV-F21T3 / (-A)
Dimensions(W × H × D)		61.9cm × 45.8cm × 48.7cm	
Mass		22kg	
TV RF System		B / G, I, D / K, K1, M	B / G, I, D / K, K1
Colour System	TV Mode	PAL / SECAM / NTSC3.58 / NTSC4.43	PAL / SECAM
	VIDEO Mode	PAL / SECAM / NTSC3.58 / NTSC4.43	
Receiving Frequency	VHF (VL)	46.25MHz~168.25MHz	
	VHF (VH)	175.25MHz~463.25MHz	
	UHF	471.25MHz~863.25MHz	
	CATV	● Cable TVs of Mid (X-Z, S1-S10) Super (S11-S20) & Hyper (S21-S41) bands receivable	
Intermediate Frequency	VIF Carrier	38.0MHz	
	SIF Carrier	32.5MHz(5.5MHz) 31.5MHz (6.5MHz) 32.0MHz (6.0MHz)	
Colour Sub Carrier Frequency		PAL (4.43MHz), SECAM (4.40625MHz / 4.25MHz) NTSC (3.58MHz / 4.43MHz)	
Aerial Input Terminal		75Ω Unbalanced	
Power Input	Rated Voltage	110~240VAC, 50 / 60Hz	
Power Consumption		100W (Max.) / 67W (Avg.)	
Picture Tube		Visible size : 51cm measured diagonally	
High Voltage		26.5kV±1.5kV(at zero beam current)	
Speaker		6cm × 12 cm Oval type × 2	
Audio Output		5W (monaural)	
Input	Video	1Vp-p, 75Ω, RCA × 2	
	Audio	500mVrms (-4dBs), High impedance, RCA × 2	
Output	Video	1Vp-p, 75Ω, RCA × 1	
	Audio	500mVrms (-4dBs), Low impedance, RCA × 1	
	Headphone jack	Mimi jack (ϕ 3.5mm)	
Remote Control Unit		RM-C364 (Battery size : AA / R06 / UM-3 × 2)	

Design & specifications are subject to change without notice.

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

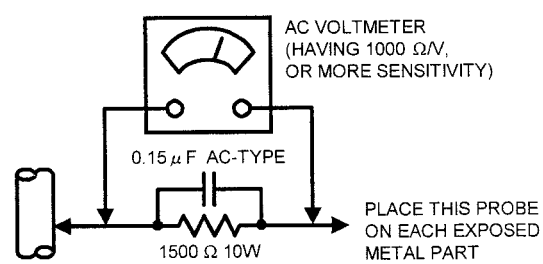
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

9. **Isolation Check**
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



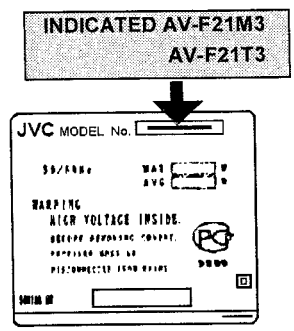
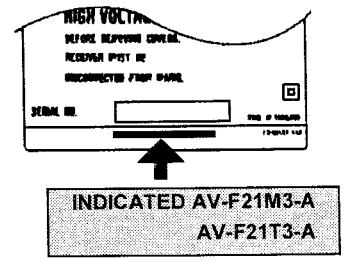
FEATURES

- New chassis design enables use of an interactive on-screen control.
- Wide range voltage (110V~240V) AC power input.
- With AUDIO / VIDEO INPUT & OUTPUT terminal.
- MUTING button can reduce the audio level to zero instantly.
- Functional remote control to operate TV set (for channel select, volume control, power ON/OFF, etc.) from a distance.
- I^2C bus control utilizes single chip ICs for IF, V/C, DEF. VSM PRESET, PRESET & TURBO TIMER.
- By means of AUTO PROGRAM, the TV stations can be selected automatically and the TV channels can also be rearranged automatically.
- Built-in ECO MODE (ECONOMY, ECOLOGY)
  In accordance with the brightness in a room, the brightness and / of contrast of the picture can be adjusted automatically to make the optimum picture which is easy on the eye.
- Built – in ON TIMER, RETURN + & CHILD LOCK.

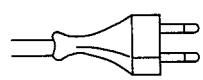
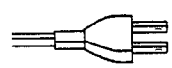
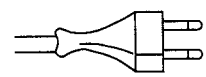
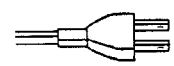
MODEL ID.(IDENTIFICATION) / MAIN DIFFERENCE LIST

MODEL IDENTIFICATION

While referring to the illustration given below, identify each model No. on the rating label affixed to the rear cover of TV set.

⚠	MODEL No. / Parts Name	AV-F21M3 AV-F21T3	AV-F21M3(-A) AV-F21T3(-A)
⚠	RATING LABEL	LC20377-010A-H	LC20413-002A-H
			

MAIN DIFFERENCE LIST

⚠	MODEL No. / Parts Name	AV-F21M3	AV-F21M3(-A)	AV-F21T3	AV-F21T3(-A)
⚠	POWER CORD	QMP40D0-200J5	QMPR010-200-E2	QMP40D0-200J5	QMPR010-200-E2
					
⚠	RATING LABEL	LC20377-010A-H	LC20413-002A-H	LC20377-010A-H	LC20413-002A-H
	PACKING CASE	LC10453-014A-H	CP11781-061-H	LC10453-020A-H	CP11781-070-H
⚠	INST. BOOK	LCT0404-001A-H	←	←	←
⚠	INST. BOOK	LCT0405-001A-H	X	X	X
⚠	DIGEST MANUAL	X	LTC0443-001A-H	LTC0440-001A-H	LTC0443-001A-H
	CONVERSION PLUG	X	QAM0055-001	X	QAM0055-001

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the power supply cord.
2. Remove the **6** screws marked Ⓐ and a screw marked Ⓑ as shown in figure.
3. Withdraw the rear cover toward you.

REMOVING THE MAIN PW BOARD

- After removing the rear cover.

1. Slightly raise the both sides of the MAIN PW BOARD by hand.
2. Withdraw the MAIN PW BOARD backward.
   (If necessary, take off the wire clamp, connectors etc.)

REMOVING THE SPEAKER

- After removing the rear cover.

1. Remove the 2 screws marked Ⓒ as shown in figure.
2. Follow the same steps when removing the other hand speaker.

CHECKING THE MAIN PW BOARD

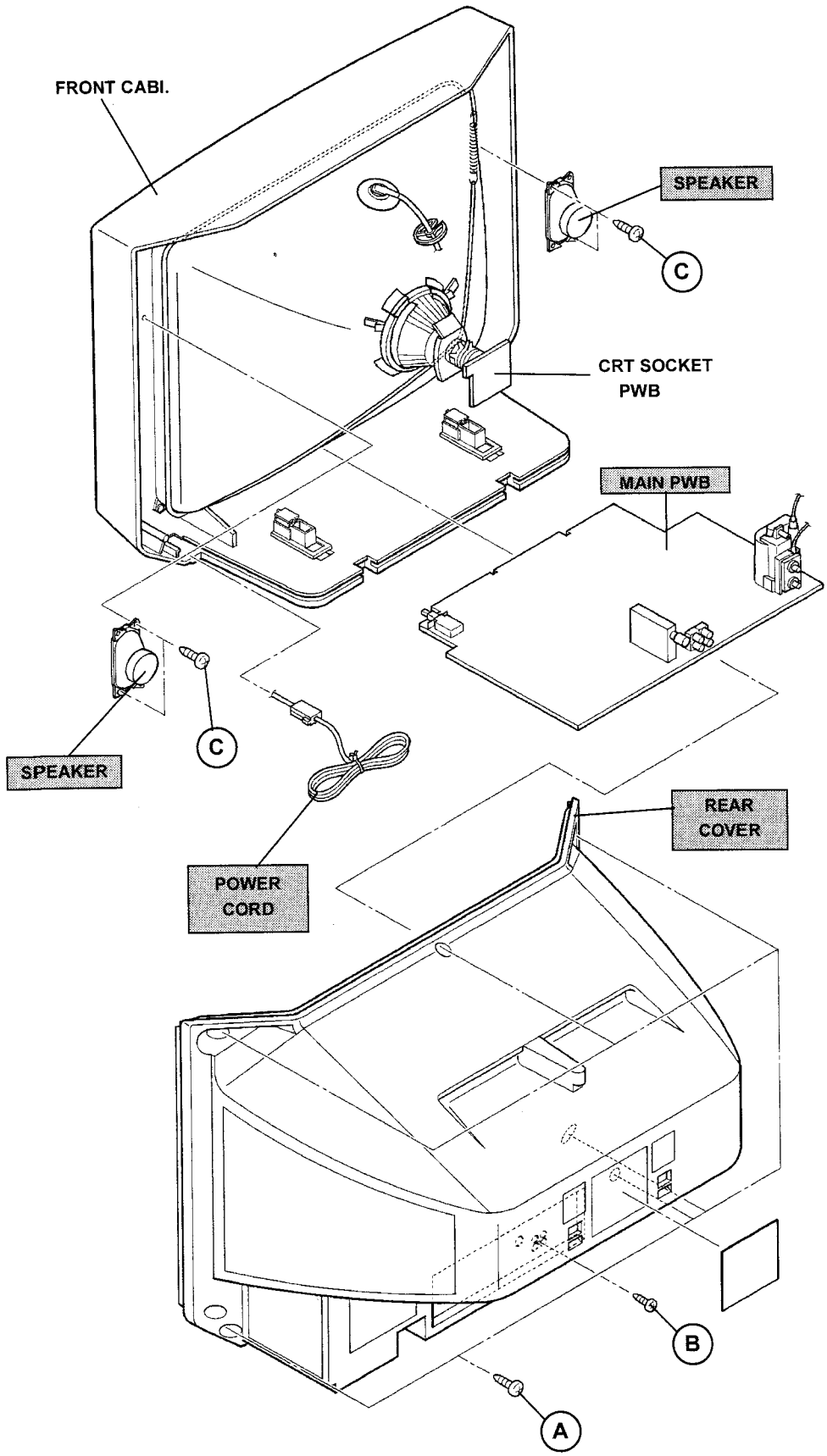
1. To check the back side of the PW Board.
   1) Pull out the MAIN PW Board. (Refer to REMOVING THE MAIN PW Board)
   2) Erect the PW Board vertically so that you can easily check the back side of the PW Board.

[CAUTION]

- When erecting the PW Board, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the CRT earth wire and other connector are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.


FRONT CABI.
SPEAKER
C
CRT SOCKET PWB
MAIN PWB
SPEAKER
C
REAR COVER
POWER CORD
B
A

REPLACEMENT OF MEMORY ICs

1. MEMORY ICs

This TV uses memory ICs. In the memory ICs are memorized data for correctly operating the video and deflection circuits. When replacing memory ICs, be sure to use ICs written with the initial values of data.

2. PROCEDURE FOR REPLACING MEMORY ICs

(1) Power off

Switch the power off and unplug the power cord from the wall outlet.

(2) Replace ICs

Be sure to use memory ICs written with the initial data values.

(3) Power on

Plug the power cord into the wall outlet and switch the power on.

(4) Check and set SYSTEM CONSTANT SET:

- **It must not adjust without signal.**

1) Press the DISPLAY key and the PICTURE MODE key of the REMOTE CONTROL UNIT simultaneously.
2) The SERVICE MENU screen of Fig. 1 will be displayed.
3) While the SERVICE MENU on display, press the DISPLAY key and PICTURE MODE key simultaneously, and the SYSTEM CONSTANT SET screen of Fig. 2 will be displayed
4) Check the setting value of the SYSTEM CONSTANT SET of Table 1. If the value is different, select the setting item with the MENU ▽/△ key, and set the correct value with the MENU - / + key.
5) Press the DISPLAY key twice, and return to the normal screen.

(5) Receive channel of setting

Refer to the **OPERATING INSTRUCTIONS** and set the receive channels (channels preset) as described

(6) User Setting

Check the user setting value of Table 2, and if setting value is different, set the correct value.
For setting, refer to the **OPERATING INSTRUCTIONS**.

(7) Setting of SERVICE MENU

Verify the setting items of the SERVICE MENU of Table 3, and reset where necessary.
For setting, refer to the **SERVICE ADJUSTMENTS**.

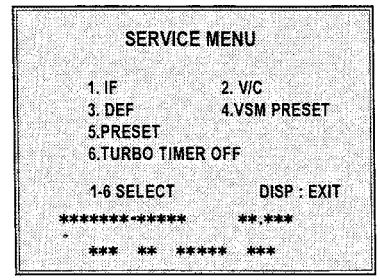
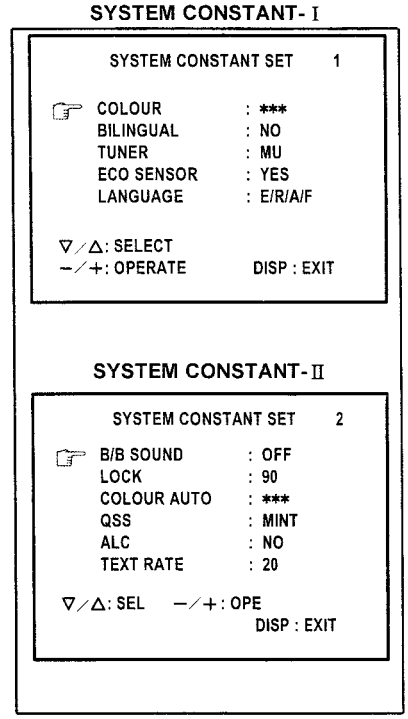


Fig. 1

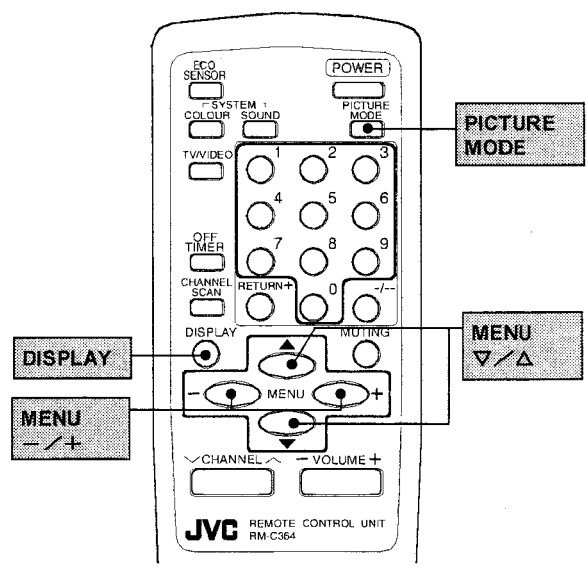
SYSTEM CONSTANT- I



SYSTEM CONSTANT- II

Fig.2

NAME OF REMOTE CONTROL KEY



REPLACEMENT OF IC301 (IF V/C DECODER)

- **For the IC301(IF V/C DECODER) of this model, all data are written in the micro-computer. So, write the data in the micro-computer in accordance with the following procedures before starting adjustment.**

REPLACING PROCEDURES

(1) Turn the POWER off.

(2) Replace the **IC301** with a new one.

(3) While pressing **MENU** button and **VOL+** button on the **FRONT CABINET** simultaneously, turn the **POWER on.** When the POWER is turned on, the data is written in the micro-computer immediately.

SETTING OF SYSTEM CONSTANT SET

Setting item	Setting contents	Setting value			
		AV-F21M3	AV-F21M3(-A)	AV-F21T3	AV-F21T3(-A)
COLOUR	MULTI. → TRIPLE → PAL	MULTI.	←	TRIPLE	←
BILINGUAL	YES → NO	NO	←	←	←
TUNER	MU→MA	MU	←	←	←
ECO SENSOR	YES → NO	YES	←	←	←
LANGUAGE	E/R/A/F→E/A/F→E/A→E/F	E/R/A/F	←	←	←
B/B SOUND	ON → OFF	OFF	←	←	←
LOCK	YES ↔10 ↔20 ↔~ ↔230 ↔ 240 ↔250	90	←	←	←
COLOUR AUTO	YES → NO	NO	YES	NO	YES
QSS	MINT →MQSS	MINT	←	←	←
ALC	YES → NO	NO	←	←	←
TEXT RATE	1↔10↔20↔40↔80	20	←	←	←

Table 1

USER SETTING VALUES

Setting item	Setting value	Setting item	Setting value
SUB POWER	ON	BILINGUAL MODE	ON
CHANNEL POSITION	1 POSITION	LANGUAGE	ENG.
VOLUME	Appropriate sound volume	CHANNEL PRESET	Refer to OPERATING INSTRUCTION
TV/VIDEO	TV	ECO SENSOR	OFF
ON SCREEN DISPLAY	POSITION NUMBER DISPLAY	VNR	OFF
COLOUR SYSTEM	AUTO PAL	AUTO SHUTOFF	OFF
SOUND SYSTEM	B / G	ON TIMER	PR1 0:00
OFF TIMER	OFF	BLUE BACK	OFF
PICTURE MODE (VSM)	BRIGHT	CHILD LOCK	OFF

Table 2

SERVICE MENU SETTING ITEMS

Service menu	Setting item	Service menu	Setting item
1. IF	1. VCO 2. DELAY POINT	**5. PRESET** (RF CIRCUIT)	1. C-TRAP FIX 2. SHARP PEAK 3. ABL 4. GAMMA 5. Y.DELAY TIME 6. BLACK EXP START 7. C-BPF 8. CW/SCP 9. VIF DET. LEVEL 10. SIF DET. LEVEL 11. IF AGC MIN. 12. VIF AGC 13. VIF P MOD 14. SIF BPF BW ADJUST 15. SIF TRAP FO ADJUST 16. SIF TRAP FO ADJUST 2 17. SIF –TRAP 18. SIF –BPF 19. VNR 20. RGB LIM. 21. RGB LIMIT LEVEL 22. SIF SW 23. TEXT H. POSITION 24. READ DATA **DO NOT ADJUST**
2. V / C	1. CUT OFF (R / G / B) 2. DRIVE (R / B) 3. BRIGHT 4. CONT. 5. COLOUR (P / S / N3 /N4) 6. TINT (N3 / N4) 7. SECAM BL ADJUST 8. SHARP (TV/VIDEO)		
3. DEF.	1. VER. POSITION 2. HOR. POSITION 3. VER. HEIGHT 4. VER. LINEARITY 5. VER. SCURVE 6. HOR. VCO ADJUST		
4. VSM PRESET (BRIGHT/STD/SOFT)	TINT COLOUR BRIGHT CONT. SHARP	**6. TURBO TIMER**	ON or OFF **(Should be OFF)** * If it is ON, the timer in TIMER mode changes from 1 minute into 1 sec temporarily. (It is easier to checks the Operation of TIMER) If you turn the TV power off, this setting becomes OFF automatically.

Table 3

SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. **There are 2 way of adjusting this TV: One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
2. **The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
3. Make sure that connection is correctly made to AC power source.
4. Turn on the power of the TV and measuring instrument for warming up for at least 30 minutes before staring adjustment.
5. If the receive or input signal is not specified, use the most appropriate signal for adjustment.
6. **Never touch parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.**
7. Preparation for adjustment (presetting):
   Unless otherwise specified in the adjustment items, preset the following functions with the REMOTE CONTROL UNIT.

PICTURE MODE (VSM)	BRIGHT
VNR	OFF
TINT / COLOUR BRIGHT / CONT. / SHARP	Refer to VSM PRESET Value
BLUE BACK	OFF
OFF TIMER	OFF
ECO SENSOR	OFF

MEASURING INSTRUMENT AND FIXTURES

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [PAL / SECAM / NTSC]
4. Remote control unit

ADJUSTMENT ITEMS

Adjustment item	Adjustment item
B1 POWER SUPPLY	V/C (Video / Chrom) circuit adjustment
FOCUS adjustment	DEF. circuit adjustment
	VSM PRESET setting
	PRESET adjustment
IF circuit adjustment	PURITY, CONVERGENCE

BASIC OPERATION OF SERVICE MENU

1. **TOOL OF SERVICE MENU OPERATION**
   Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

2. **SERVICE MENU ITEMS**
   With the SERVICE MENU, various settings (adjustments) can be made, and they are broadly classified in the following items of settings :

- **1. IF** ..... This mode adjusts the setting values of the IF circuit.
- **2. V/C** ..... This mode adjusts the setting values of the VIDEO/CHROMA circuit.
- **3. DEF.** ..... This mode adjusts the setting value of the DEFLECTION circuit.
- **4. VSM PRESET** ..... For setting the values of STANDARD, SOFT and BRIGHT. (VSM : video status memory)
- **5. PRESET** ..... This mode adjusts the setting value of the RF circuit **(Do not adjust)**.
- **6. TURBO TIMER** ..... For quick setting the value of TIMER COUNT adjustable not only by minutes but also by second. (Should be OFF)

3. BASIC OPERATION OF SERVICE MENU

(1) How to enter SERVICE MENU

Press the DISPLAY key and the PICTURE MODE key of the REMOTE CONTROL UNIT simultaneously.
The SERVICE MENU screen of Fig. 1 will be displayed.

SERVICE MENU

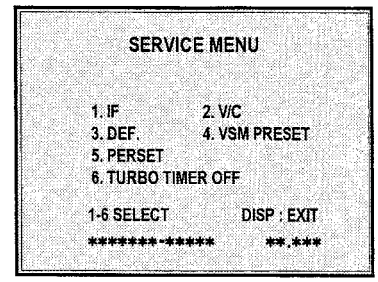


Fig. 1

(2) Selection of SUB MENU SCREEN

Press one of the keys 1 ~ 6 of the REMOTE CONTROL UNIT,
and select the SUB MENU SCREEN (See Fig.2) from the SERVICE MENU.

SERVICE MENU → SUB MENU **1. IF** **4.VSM PRESET**
2. V / C **5.PRESET**
3. DEF. **6.TURBO TIMER**

SUB MENU SCREEN

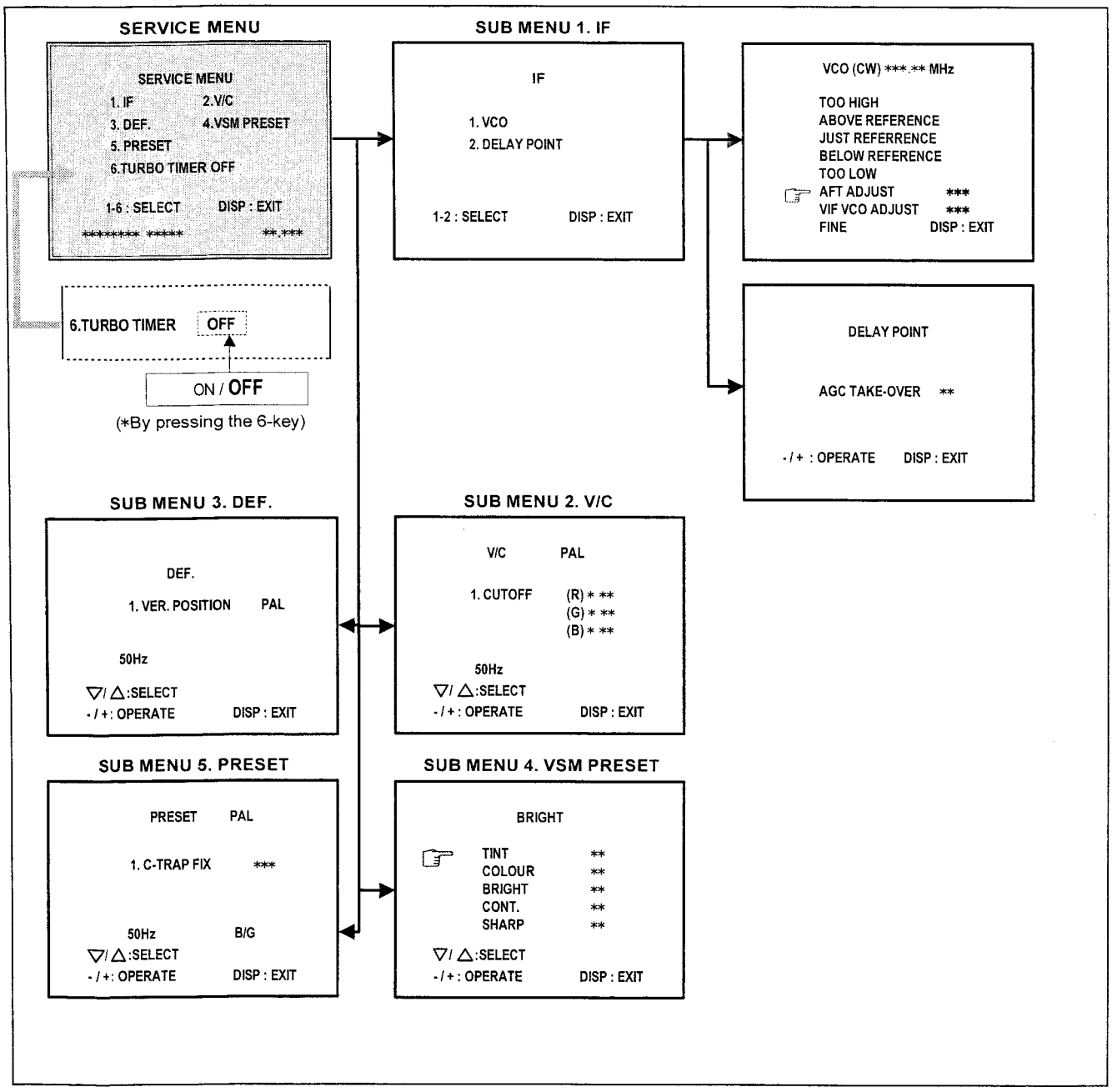


Fig. 2

(3) Method of Setting

* Once the setting values are set, they are memorized automatically.
* It must not adjust without signal.

1. IF

[1. VCO]

① 1 Key ····· Select **1. IF**.
② 1 Key ····· Select **1. VCO. (CW)**
③ The VCO(CW) screen will be displayed in yellow when the AFC voltage is at a certain level and in blue when it is at other levels.
④ DISPLAY Key ····· When this is pressed twice, you will return to the **SERVICE MENU**.

[2. DELAY POINT]

① 1 Key ····· Select **1. IF**.
② 2 Key ····· Select **2. DELAY POINT**.
③ MENU - / + Key ····· Set (adjust) the setting values of the setting items.
④ DISPLAY Key ····· When this is pressed twice, you will return to the **SERVICE MENU**.

2. V/C ,3. DEF. and 4. VSM PRESET

① 2, 3, 4 Keys ····· Select one from **2. V/C, 3.DEF. and 4. VSM PRESET**
② MENU ▽ / △ key ····· Select setting items.
③ MENU - / + Key ····· Set (adjust) the setting values of the setting items.
④ DISPLAY Key ····· When this is pressed, you will return to the **SERVICE MENU**.

5. PRESET **(DO NOT ADJUST)**

① 5 Keys ····· Select **5. PRESET.**
② MENU ▽ / △ key ····· Select setting item.
③ MENU - / + Key ····· Set (adjust) the setting values of the setting item.
④ DISPLAY Key ····· When this is pressed, you will return to the **SERVICE MENU**.

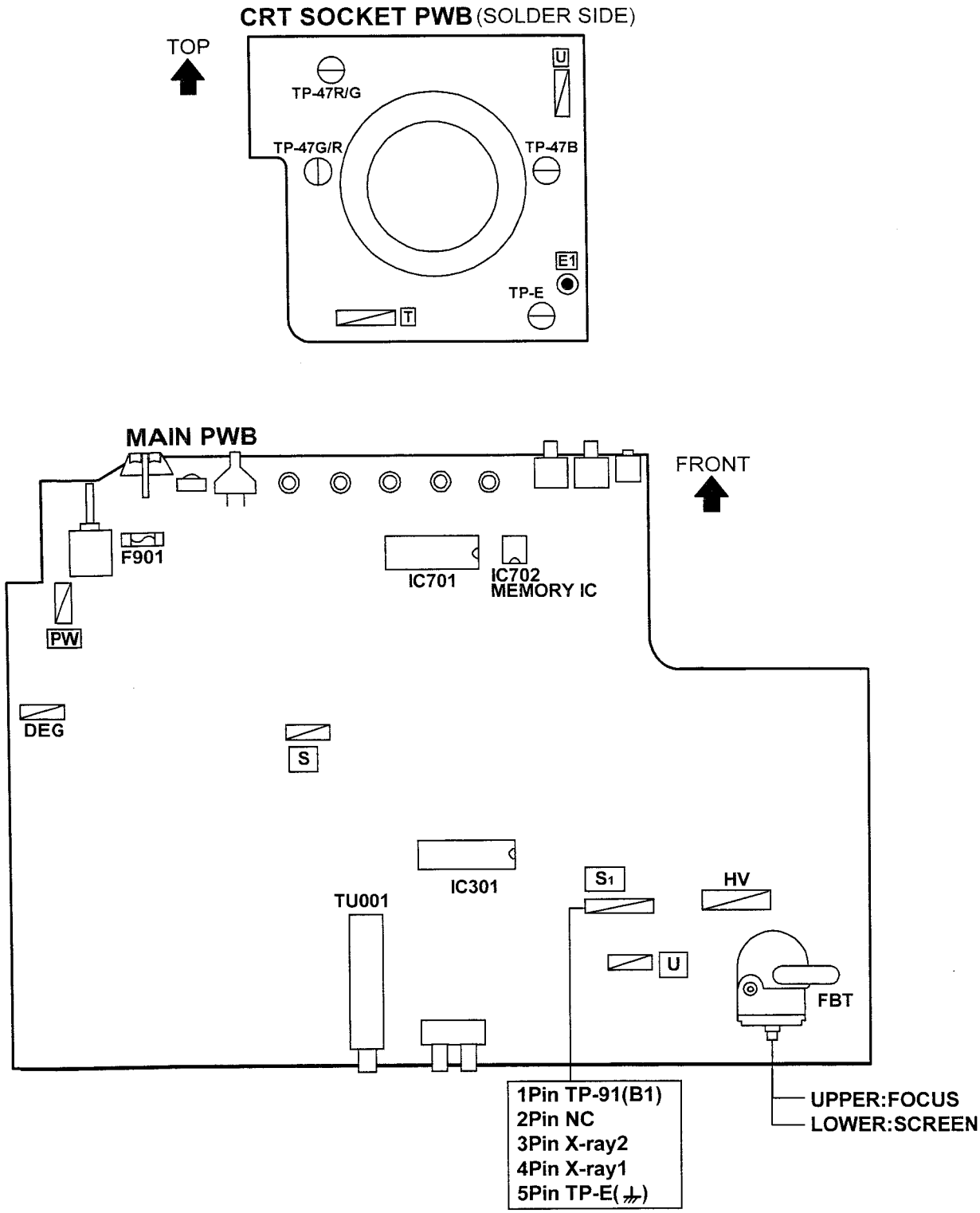
6. TURBO TIMER

① By pressing the 6-key, you can change the ON or OFF(should be **OFF**)

(4) Release of SERVICE MENU

After completing the setting, return to the SERVICE MENU, then again press the DISPLAY key.

ADJUSTMENT LOCATIONS



ADJUSTMENTS

B1 POWER SUPPLY

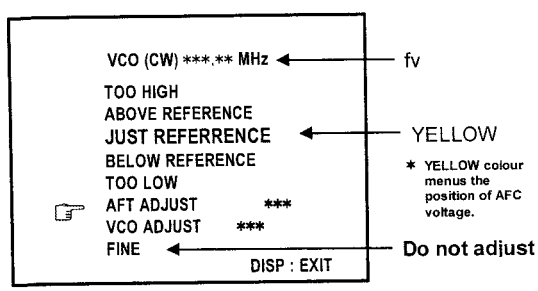
Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 Power Supply	Signal generator DC Volt-meter	TP-91 (B1) TP-E (⏚)		1. Receive a whole black signal. 2. Connect a DC voltmeter to TP-91(B1) and TP-E (⏚). 3. Make sure that the voltage is DC114.5±1.5V.

FOCUS ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of FOCUS	Signal generator		FOCUS VR [In FBT]	1. Receive a cross-hatch signal. 2. While watching the screen, adjust the FOCUS VR to make the vertical and horizontal lines as fine and sharp as possible. 3. Make sure that when the screen is darkened, the lines remain in good focus.

IF CIRCUIT ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of VCO(CW)	Remote control unit		VCO(CW) TRANSF.	* **It must not adjust without signal.** 1. Receive a COLOUR BAR SIGNAL(210.25MHz). 2. Select **1. IF** from the SERVICE MENU. 3. Press **1** key and select **1. VCO** to display **VCO SCREEN**. 4. Select **VCO ADJUST** with MENU ▽/△ key and make sure that the set-up value is shown as +00. Then check the items 5 and 6 below. 5. With MENU -/+ key, change the value from +00 to **-01** and make sure that the colour of the characters **TOO LOW** changes to **YELLOW**. Then return the value to **+00**. 6. With MENU -/+ key, change the value from +00 to **+01** and make sure that the colour of the characters **TOO HIGH** changes to **YELLOW**. Then return the value to **+00**. 7. Select **AFT ADJUST** with MENU ▽/△ key. Then press MENU -/+ key until the characters **JUST REFERENCE** changes from blue to **YELLOW**. 8. Press the DISPLAY key three times to return to normal screen. ◆ If you cannot check the colour change of the characters within the range of ±01 as explained in item 5 and 6 above, use the **±02** range for checking.

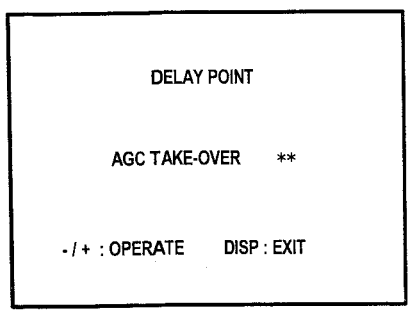


ADJUSTMENT ITEM	SET-UP VALUE
VCO ADJUST	+00(**)
AFT ADJUST	+00(**)

SET-UP VALUE

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of DELAY POINT (AGC)	**Remote control unit**		**DELAY POINT** (AGC TAKE-OVER)	1. Receive a black and white signal (colour off). 2. Select **1. IF** from the SERVICE MENU. 3. Select **2. DELAY POINT** by pressing the **2** key on the remote control. 4. Adjust the MENU - or + key until video noise disappears. 5. Turn to other channels and make sure that there are no irregularities.

Setting (adjustment) item		Variable range	Initial setting value
DELAY POINT (AGC TAKE-OVER)	NTSC 3.58(M)	0～63	+51
	OTHER		+48

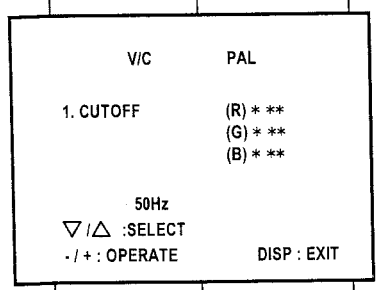


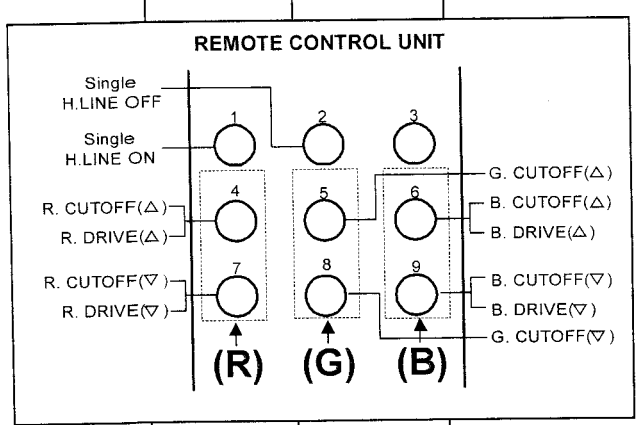
V / C CIRCUIT ADJUSTMENT

The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- **Do not change the initial setting values of the setting items not listed in "ADJUSTMENT".**

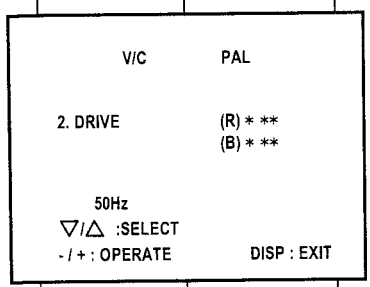
Setting item \ Colour system		Variable range	Initial setting value			
			PAL	SECAM	VIDEO	
					NTSC 3.58	NTSC 4.43
1. CUT OFF	RED	-128～+127	-50	←	←	←
	GREEN		-50			
	BLUE		-50			
2. DRIVE	RED	-128～+127	+0	←	←	←
	BLUE		+0			
3. BRIGHT		-124～+127	+0	←	——	——
4. CONT.		-63～+63	+0	←	←	←
5. COLOUR		-63～+63	+0	←	←	←
6. TINT	TV	-63～+63	——	——	+0	←
	VIDEO		——	——	+19	←
7. SECAM BL ADJ.		-32～+31	——	+0	——	——
8. SHARP (Do Not Adj.)	TV	-32～+31	-5	←	←	←
	VIDEO		+15			

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of WHITE BALANCE (Low light)	● Signal generator ● Remote control unit		1. CUT OFF (R) CUT OFF (G) CUT OFF (B) SCREEN VR (IN FBT)	1. Receive a black and white signal (colour off). 2. From the SERVICE MENU, selct **2. V/C** to display **1. CUT OFF (R)**, **(G)** and **(B)** . 3. Set each value to initial setting value with 4~9 keys of the remote control unit. 4. Press the **1** key of the remote control unit to produce a single horizontal line. 5. Turn the **SCREEN VR** fully counter-clockwise, then slowly turn it clockwise to where a red, blue and green colour is faintly visible. 6. Use keys **4~9** of the remote control unit and adjust the other 2 colours to where the single horizontal line appears white. 7. Turn the **SCREEN VR** to where the single horizontal line glows faintly. 8. Press the **2** key to return to **1. CUT OFF** screen. 9. Press the DISPLAY key twice to return to the normal screen.
Adjustment of WHITE BALANCE (High light)	● Signal generator ● Remote control unit		2. DRIVE (R) DRIVE (B)	1. Receive a black and white signal (colour off). 2. From the SERVICE MENU, selct **2. V/C**. 3. Select **2. DRIVE (R) / (B)** with MENU ▽/△key, and set each value to initial setting value with **4** and **7** or **6** and **9** keys of the remote control unit. 4. Use the keys **4** and **7** or **6** and **9** to produce a white screen 5. Press the DISPLAY key twice to return to the nomal screen.



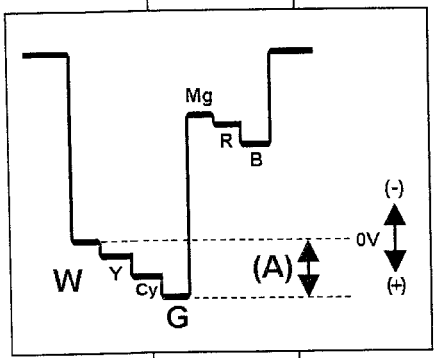


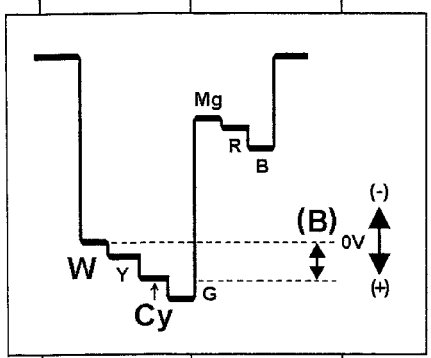
Setting (Adjustment) item		Variable range	Initial setting value
1. CUT OFF	R	-128~+127	-50
	G	-128~+127	-50
	B	-128~+127	-50



Setting (Adjustment) item		Variable range	Initial setting value
2. DRIVE	R	-128~+127	+0
	B	-128~+127	+0

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB BRIGHT	● **Remote control unit**		**3. BRIGHT**	1. Receive any broadcast. 2. Select **2. V/C** from SERVICE MENU. 3. Select **3. BRIGHT** with the MENU ▽/△ key. 4. Set the initial setting value with the MENU - or + key. 5. If the brightness is not the best with the initial set value, make fine adjustment until you get the best brightness.
Adjustment of SUB CONT.	● **Remote control unit**		**4. CONT.**	1. Receive any broadcast. 2. Select **2. V/C** from SERVICE MENU. 3. Select **4. CONT.** with the MENU ▽/△ key. 4. Set the initial setting value with the MENU - or + key. 5. If the contrast is not the best with the initial set value, make fine adjustment until you get the best contrast.
Adjustment of SUB COLOUR I	● **Remote control unit**		**5. COLOUR**	**[Method of adjustment without measuring instrument]**
			PAL COLOUR	**(PAL COLOUR)** 1. Receive a PAL broadcast. 2. Select **2. V/C** from the SERVICE MENU. 3. Select **5. COLOUR** with the MENU ▽/△ key. 4. Set the initial setting value for PAL COLOUR with the MENU - or + key. 5. If the colour is not the best with the initial set value, make fine adjustment until you get the best colour.
			SECAM COLOUR	**(SECAM COLOUR)** 1. Receive a SECAM broadcast. 2. Make fine adjustment of SECAM COLOUR as previously.
			NTSC 3.58 COLOUR	**(NTSC 3.58 COLOUR)** 1. At RF or VIDEO terminal, receive a NTSC 3.58 video colour bar signal. 2. Make similar fine adjustment of NTSC 3.58 COLOUR as previously.
				(NTSC 4.43 COLOUR) When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.

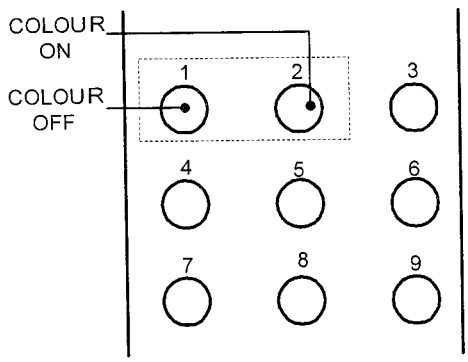
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td rowspan="4">Adjustment of SUB COLOUR Ⅱ</td><td rowspan="4">● Signal generator
● Oscillo-scope
● Remote control unit</td><td rowspan="4">TP-47G / B
TP-E (⏚)
[CRT SOCKET PWB]</td><td>5. COLOUR</td><td>[Method of adjustment using measuring instrument]</td></tr>
<tr><td>PAL COLOUR</td><td>(PAL COLOUR)
1. Receive a PAL full field colour bar signal (75% white).
2. Select 2. V/C from SERVICE MENU.
3. Select 5. COLOUR with the MENU ▽/△ key.
4. Set the initial setting value of PAL COLOUR with the MENU - or + key.
5. Connect the oscilloscope between TP-47G and TP-E.
6. Adjust PAL COLOUR to bring the value of (A) in the illustration to +11V (W&G).</td></tr>
<tr><td>SECAM COLOUR</td><td>(SECAM COLOUR)
1. Receive a SECAM full field colour bar signal (75% white).
2. Set the initial setting value of SECAM COLOUR with the MENU - or + key.
3. Adjust SECAM COLOUR to bring the value of (A) in the illustration to +6V (W & G).</td></tr>
<tr><td>NTSC 3.58 COLOUR</td><td>(NTSC 3.58 COLOUR)
1. At RF or VIDEO terminal, receive a NTSC 3.58 full field colour bar signal (75% white).
2. Set the initial setting value of NTSC 3.58 COLOUR with the MENU - or + key.
3. Adjust NTSC 3.58 COLOUR to bring the value of (A) in the illustration to given bellow table (W&G).
<table><tr><th>MODEL No.</th><th>Value (Vw-G)</th></tr><tr><td>AV-F21M3
AV-F21M3(-A)</td><td>+8V</td></tr><tr><td>AV-F21T3
AV-F21T3(-A)</td><td>+9V</td></tr></table></td></tr>
<tr><td colspan="3"> 
</td><td></td><td>(NTSC 4.43 COLOUR)
When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.</td></tr>
</table>

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td rowspan="3">Adjustment of TINT I</td><td rowspan="3">● Remote control unit</td><td rowspan="3"></td><td>6. TINT</td><td>[Method of adjustment without measuring instrument]</td></tr>
<tr><td>NTSC 3.58 TINT</td><td>(NTSC 3.58 TINT)
1. Receive (RF or VIDEO terminal) a NTSC 3.58 full field colour bar signal (75% white).
2. Select 2. V/C from SERVICE MENU.
3. Select 6. TINT with the MENU ▽/△ key.
4. Set the initial setting value of NTSC 3.58 with the MENU - or + key.
5. If you cannot get the best tint with the initial setting value, make fine adjustment until you get the best tint.</td></tr>
<tr><td></td><td>(NTSC 4.43 COLOUR)
When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.</td></tr>
<tr><td rowspan="3">Adjustment of TINT II</td><td rowspan="3">● Signal generator
● Oscillo-scope
● Remote control unit</td><td rowspan="3">TP-47G / B
TP-E (⏚)
[CRT SOCKET PWB]</td><td>6. TINT</td><td>[Method of adjustment using measuring instrument]</td></tr>
<tr><td>NTSC 3.58 TINT</td><td>(NTSC 3.58 TINT)
1. At RF or VIDEO terminal, receive a NTSC 3.58 full field colour bar signal (75% white).
2. Select 2. V/C from SERVICE MENU.
3. Select 6. TINT with the MENU ▽/△ key.
4. Set the initial setting value of NTSC 3.58 with the MENU - or + key.
5. Connect the oscilloscope between TP-47G and TP-E.
6. Adjust NTSC 3.58 TINT to bring the value of (B) in the illustration to given bellow table (W&Cy).
 

<table>
<tr><th>MODEL No.</th><th>Value (Vw-Cy)</th></tr>
<tr><td>AV-F21M3
AV-F21M3(-A)</td><td>+4V</td></tr>
<tr><td>AV-F21T3
AV-F21T3(-A)</td><td>+7V</td></tr>
</table></td></tr>
<tr><td></td><td></td><td></td><td></td><td>(NTSC 4.43 TINT)
When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.</td></tr>
</table>

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment Of SECAM BL (BLACK OFFSET)	• Remote control unit • Signal generator		7. SECAM BL ADJUST	**[Method of adjustment using measuring instrument]** 1. Receive a SECAM HALF COLOUR BAR signal (210.25MHz). 2. Select **2. V/C** from SERVICE MENU. 3. Select **7. SECAM BL ADJUST** with MENU ▽/△ key. 4. Set the initial setting value with the MENU – or + key. 5. Switch the ①key (colour OFF) and ②key (colour ON) on the remote control and make sure that there is no colour on the black and white screen. 6. If the black and white screen is not best with the initial setting value, make fine adjustment until you get the best black and white screen. 7. Press the DISPLAY key twice to return to the normal screen.

REMOTE CONTROL UNIT



DEFLECTION CIRCUIT ADJUSTMENT

- There are 2 modes of adjustment (setting value) ------ fV : 50Hz mode and fV : 60Hz mode ----- depending upon the kind of signals (vertical frequency 50Hz / 60Hz).
- When adjusted in mode ① , mode ② will be automatically set.

The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.

Setting item	Variable range	Initial setting value	
		fV : 50Hz MODE	fV : 60Hz MODE
1. VER. POSITION	-4 ~ +3	-1	-3
2. HOR. POSITION	-16 ~ +15	+4	+3
3. VER. HEIGHT	-64 ~ +63	-21	-2
4. VER. LINEARITY	-32 ~ +31	+14	-5
5. VER. SCURVE	-32 ~ +31	-32	+0
6. HOR. VCO ADJUST	-63 ~ +62	+0	+0

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of V.HEIGHT & V. POSITION	● Remote control unit		1. VER. POSITION 3. VER. HEIGHT	**[fv : 50Hz mode]** 1. Receive a cross-hatch signal. 2. Select **3. DEF.** from SERVICE MENU. 3. Select **1. VER. POSITION** with the MENU △ / ▽ key. 4. Set the initial setting value with the MENU - / + key. 5. Adjust **VER. POSITION** and adjust it to be vertical center. as shown in Fig.2, with the MENU - / + key. 6. Select **3. VER. HEIGHT** with the MENU key. 7. Set the initial setting value with the MENU - / + key. 8. Adjust **VER. HEIGHT** and make the vertical screen size **92%** of the picture size as shown in Fig.1 with the MENU - / + keys of remote control unit.
Adjustment of HOR. POSITION	● Remote control unit		2. HOR. POSITION	9. Receive a circle pattern signal. 10. Select **2. HOR POSITION** with the MENU △ / ▽ key. 11. Set the initial setting value of **2. HOR. POSITION** with the MENU - / + key. 12. Adjust **2. HOR. POSITION** to make **H=H"** as shown in Fig.2 with the MENU - / + key.

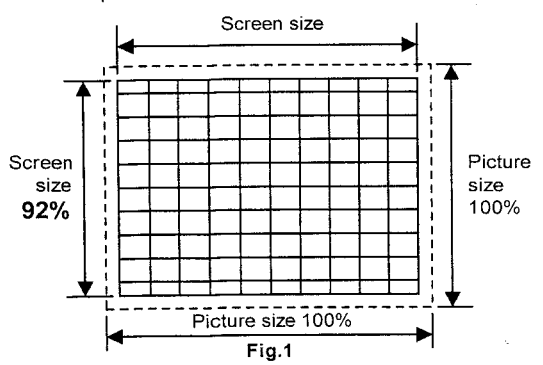


Fig.1

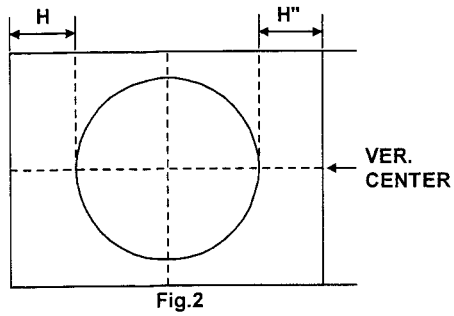


Fig.2

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of VER. LIN. & VER. SCURVE	● Remote control unit		4. VER. LIN. 5. VER. SCURVE	● **When the vertical linearity is to bad, Perform the following steps.** 13. Receive a cross-hatch signal. 14. Select **4. VER. LIN.** with the MENU ▽/△ key. 15. Set the initial setting value of **4. VER LIN.** with the MENU - / + key. 16. Select **5. VER. SCURVE** with the MENU ▽/△ key. 17. Set the initial setting value of **5. VER. SCURVE** with the MENU - / + key. 18. Adjust **4. VER. LIN.** and **5. VER. SCURVE** so that the spaces of each line as shown in Fig.3 on **TOP**, **CENTER** and **BOTTOM** become uniform.

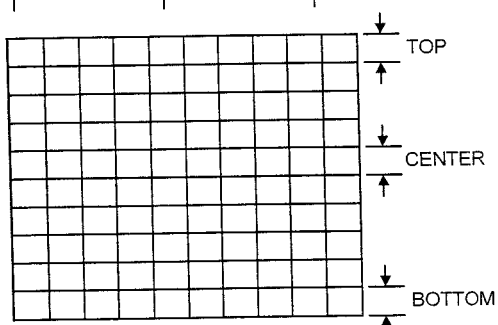


Fig.3

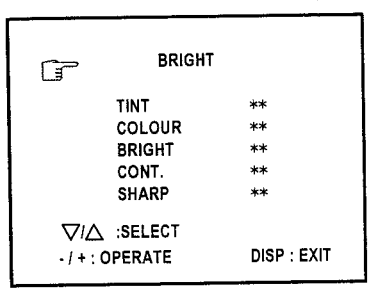
19. Make sure that the adjustment is properly done on the screen of 60Hz mode.

[NOTE]

- Adjust to make both 50Hz & 60Hz are the same v. size and fine straight line.
- When adjust again, adjust 50Hz mode first.
- When adjust in 60Hz mode, only 60Hz mode is adjust.
- Ver. linearity adjustment is only fine adjustment.

VSM PRESET ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Setting of VSM PRESET	● Remote control unit		TINT COLOUR BRIGHT CONT. SHARP	(VSM PRESET) 1. Select **4. VSM PRESET** from the SERVICE MENU. 2. Select BRIGHT with the PICTURE MODE key. 3. Adjust the MENU ▽/△ and MENU - or + key to bring the set values of **TINT ~ SHARP** to the values shown in the table. 4. Respectively select the VSM PRESET mode for SOFT and STANDARD, and make similar adjustment as in 3 above.



VSM preset mode / VSM Setting item	BRIGHT	STANDARD	SOFT
TINT SETTING VALUE	15	←	←
COLOUR SETTING VALUE	15	←	←
BRIGHT SETTING VALUE	15	←	←
CONT. SETTING VALUE	30	15	11
SHARP SETTING VALUE	15	←	12

SETTING VALUE OF VSM PRESET

PRESET ADJUSTMENT (DO NOT ADJUST)

- The items in the following table, it is no requirement for adjustment.
- If values had changed by the miss operation, set the initial setting values in the following table.

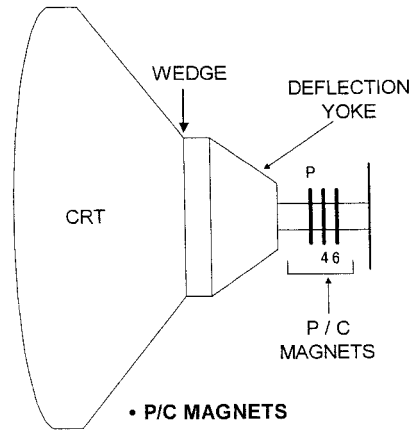
Setting item		Initial setting value			
		PAL	SECAM	NTSC 3.58	NTSC 4.43
1. C TRAP FIX		0	←	←	←
2. SHARP PEAK		0	←	—	—
3. ABL		1	←	—	—
4. GAMMA		0	←	←	←
5. Y. DELAY TIME	TV	1	2	←	3
	VIDEO	0	2	0	2
6. BLACKEXP START		3	←	←	←
7. C-BPF	TV	1	←	0	←
	VIDEO	1	←	←	←
8. CW / SCP		0	←	←	←
9. VIF DET LEVEL		+0	←	←	←
11. IF AGC MIN		0	←	0	0
12. VIF AGC		0	←	←	←
13. VIF PMOD		0	←	0	0
19. VNR		15	←	←	←
20. RGB LIM		1	←	←	←
21. RGB LIMIT LEVEL		2	←	2	2
23. TEXT H. POSITION		+5	←	←	←
24. READ DATA		——	——	——	——

Setting item	B/G	I	D/K	M (AV-F21M3 / AV-F21M3(-A))
10. SIF DET LEVEL	+0	←	←	←
14. SIF BPF BW ADJUST	+0	←	←	←
15. SIF TRAP FO ADJUST	+0	←	←	←
16. SIF TRAP FO ADJUST 2	+0	←	←	←
17. SIF -TRAP	0	←	←	←
18. SIF -BPF	0	←	←	1
22. SIF SW	+1	←	←	0

PURITY / CONVERGENCE ADJUSTMENT

PURITY ADJUSTMENT

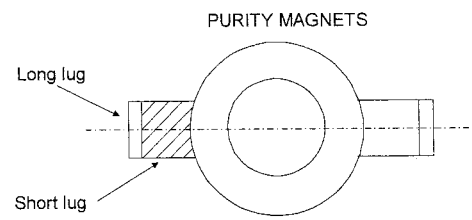
1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig.2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the center of the screen. (Fig.3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



• **P/C MAGNETS**

P : PURITY MAGNET
4 : 4 POLES (convergence magnets)
6 : 6 POLES (convergence magnets)

Fig.1



Bring the long lug over the short lug and position them horizontally.

Fig.2

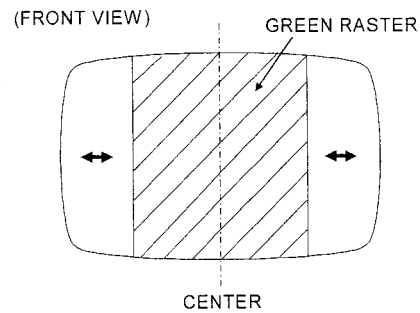


Fig.3

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig.1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta(red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

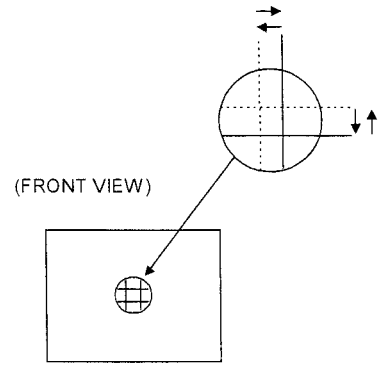


Fig.1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

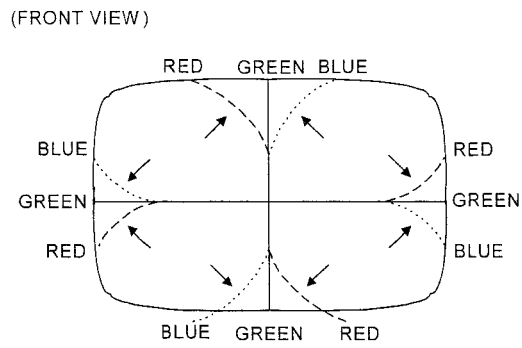


Fig.2

- After adjustment, fix the wedge at the original position.
  Fasten the retainer screw of the deflection yoke.
  Fix the 6 magnets with glue.

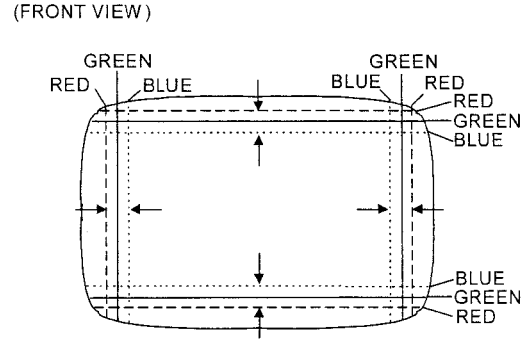


Fig.3

SELF CHECK FUNCTIONS

1. Outline

This model has self check functions given below. When an abnormality has been detected, the SUB POWER is turned OFF and the LED flashes to inform of the failure. An abnormality is detected by the signal input state of the control line connected to the microcomputer.

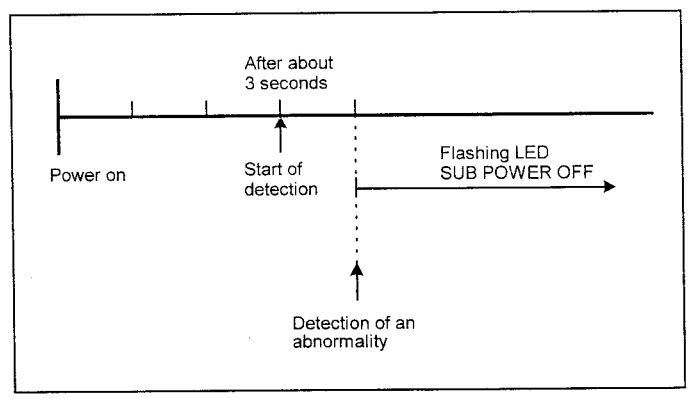
2. Self check items

Check item	Details of detection	Method of detection	State of abnormality
Over-current protection	An over-current on the LOW-B line is detected.	The main microcomputer detects the possible abnormality at 20-msec. intervals and judges the results in every 24 time. Of the 24 times, if NG is detected more than 13 times, it is judged that there is an abnormality	When an abnormality has been detected, the SUB-POWER is turned off. While the SUB-POWER is being turned off, the power key of the remote controller is not operational until the power plug is taken out and put in again.
CRT NECK protection	Operation of Vertical deflection circuit.	DITTO	DITTO

3. Self check indicating function

At about 3 seconds after the power is turned ON, the self-check function starts.

In case where an abnormality has been detected, the OFF TIMER LED flashes, and the SUB-POWER is turned OFF.



[Indication by LED]

Item	LED flashing intervals
Over-current protection CRT NECK protection	Turning on and off 0.24-second intervals

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

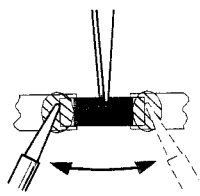
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

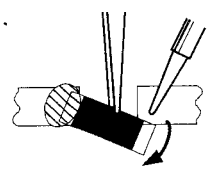
1. How to remove Chip parts

◆ **Resistors, capacitors, etc.**

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

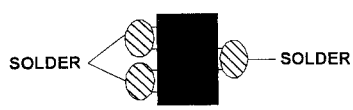


(2) Shift with tweezers and remove the chip part.

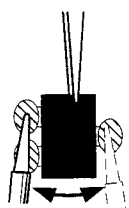


◆ **Transistors, diodes, variable resistors, etc.**

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

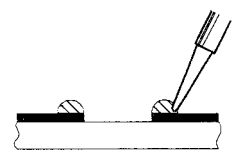


Note : After removing the part, remove remaining solder from the pattern.

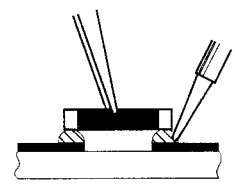
2. How to install Chip parts

◆ **Resistors, capacitors, etc.**

(1) Apply solder to the pattern as indicated in the figure.



(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

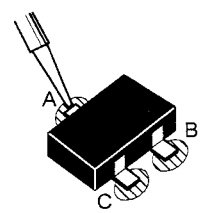


◆ **Transistors, diodes, variable resistors, etc.**

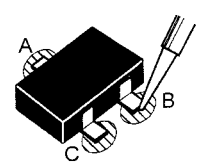
(1) Apply solder to the pattern as indicated in the figure.

(2) Grasp the chip part with tweezers and place it on the solder.

(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines —— in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

CONTENTS

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■ EXPLODED VIEW PARTS LIST 31, 32
■ EXPLODED VIEW 31, 33

■ PRINTED WIRING BOARD PARTS LIST
● MAIN PW BOARD ASS'Y (With CRT SOCKET PW BOARD) 34

■ PACKING 38
■ PACKING PARTS LIST 38

USING P.W. BOARD & REMOTE CONTROL UNIT

Model / PWB NAME	AV-F21M3	AV-F21M3(-A)	AV-F21T3	AV-F21T3(-A)
MAIN P.W.B	SCG-1011A-H2	←	←	←
REMOTE CONTROL UNIT	RM-C364-1H	←	←	←

REMOTE CONTROL UNIT PARTS LIST (RM-C364-1H)

⚠ Ref.No.	Part No.	Part Name	Description	Local
	25-1168 B	BATTERY COVER		

EXPLODED VIEW PARTS LIST

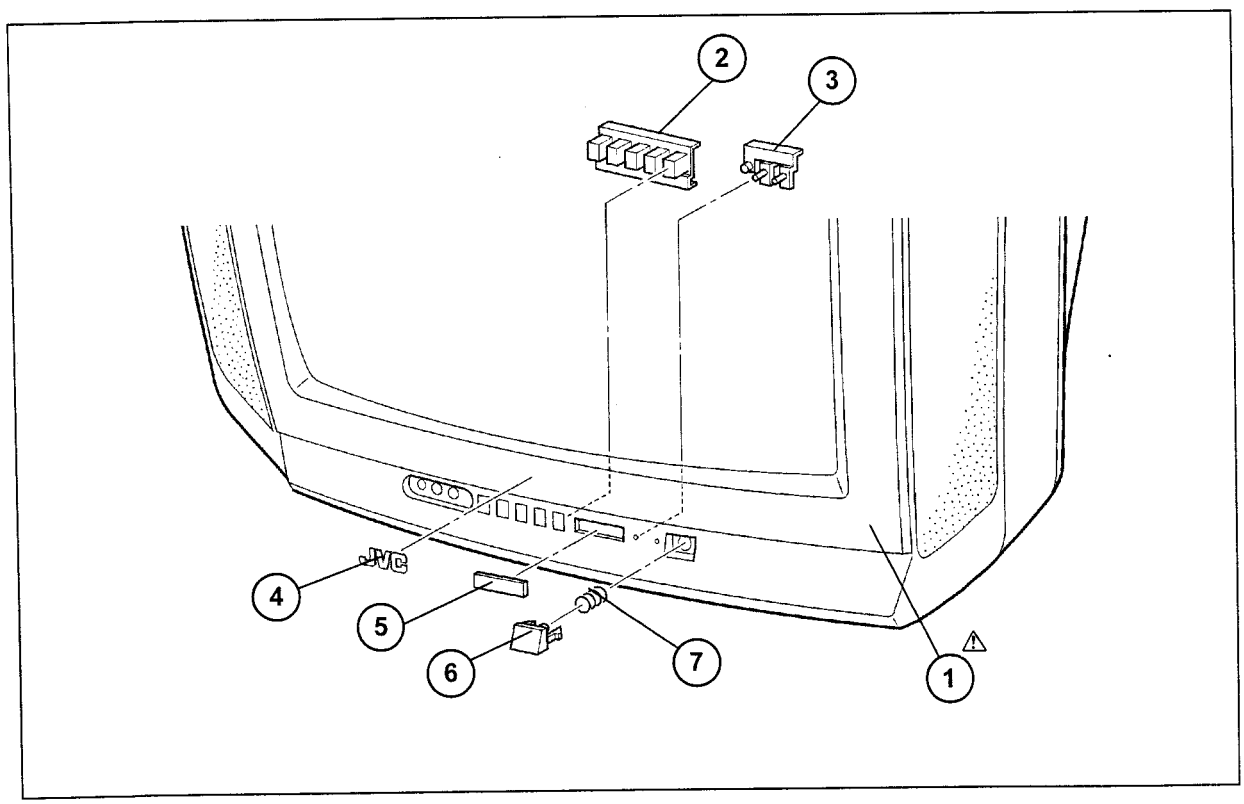
AV-F21M3 / AV-F21M3(-A)

⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	1	LC10394-004A-H	FRONT CABINET		
	2	LC20292-001A-H	CONTROL KNOB		
	3	LC30618-001A-H	L.E.D.LENS		
	4	CM48006-A03-H	JVC MARK	[AV-F21M3]	
	4	CM48006-006-C	JVC MARK	[AV-F21M3(-A)]	
	5	LC30617-001C-H	E.E. WINDOW		
	6	LC30616-001B-H	POWER KNOB		
	7	CM35235-006-H	SPRING		

AV-F21T3 / AV-F21T3(-A)

⚠	Ref.No.	Part No.	Part Name
⚠	1	LC10394-017A-H	FRONT CABINET
	2	LC20292-001A-H	CONTROL KNOB
	3	LC30618-001A-H	L.E.D.LENS
	4	CM48006-006-C	JVC MARK
	5	LC30617-001C-H	E.E. WINDOW
	6	LC30616-001B-H	POWER KNOB
	7	CM35235-006-H	SPRING

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

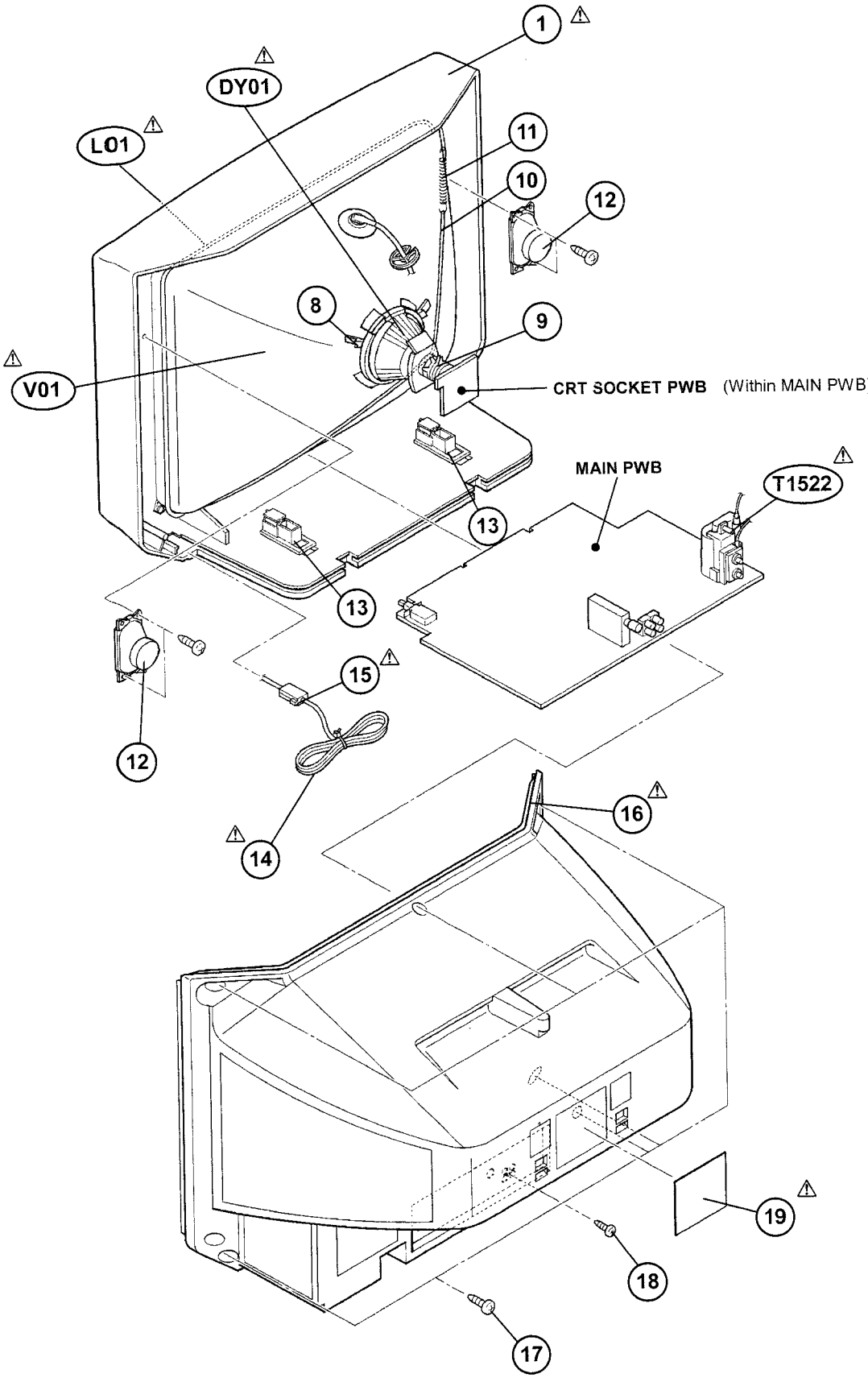
AV-F21M3 / AV-F21M3(-A)

⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	V01	A51LMV20X	PICTURE TUBE(C)		
⚠	DY01	CE20336-00A	DEF YOKE		
⚠	L01	QQW0006-001	DEG.COIL		
⚠	T1522	QQH0021-002	FB TRANSF.		
	8	CE40764-00A	WEDGE ASSY	(×3)	
	9	A75034-B	P.C.MAGNET		
	10	CHGB0016-0B-FH	BRAIDED WIRE		
	11	A48457-3-H	SPRING		
	12	QAS0036-001	SPEAKER	(×2)	
	13	CM36623-B01-H	CHASSIS RAIL	(×2)	
⚠	14	QMP40D0-200J5	POWER CORD	[AV-F21M3]	
⚠	14	QMPR010-200-E2	POWER CORD	[AV-F21M3(-A)]	
⚠	15	CM47005-A01-H	CORD CLAMP		
⚠	16	LC10448-002B-H	REAR COVER		
	17	QYSB5FG4016Z	TAPPING SCREW	(×6)	
	18	QYSBSF3010Z	TAPPING SCREW	(×1)	
⚠	19	LC20377-010A-H	RATING LABEL	[AV-F21M3]	
⚠	19	LC20413-002A-H	RATING LABEL	[AV-F21M3(-A)]	

AV-F21T3 / AV-F21T3(-A)

⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	V01	A51LMV20X	PICTURE TUBE(C)		
⚠	DY01	CE20336-00A	DEF YOKE		
⚠	L01	QQW0006-001	DEG.COIL		
⚠	T1522	QQH0021-002	FB TRANSF.		
	8	CE40764-00A	WEDGE ASSY	(×3)	
	9	A75034-B	P.C.MAGNET		
	10	CHGB0016-0B-FH	BRAIDED WIRE		
	11	A48457-3-H	SPRING		
	12	QAS0036-001	SPEAKER	(×2)	
	13	CM36623-B01-H	CHASSIS RAIL	(×2)	
⚠	14	QMP40D0-200J5	POWER CORD	[AV-F21T3]	
⚠	14	QMPR010-200-E2	POWER CORD	[AV-F21T3(-A)]	
⚠	15	CM47005-A01-H	CORD CLAMP		
⚠	16	LC10448-002B-H	REAR COVER		
	17	QYSBSFG4016Z	TAPPING SCREW	(×6)	
	18	QYSBSF3010Z	TAPPING SCREW	(×1)	
⚠	19	LC20377-010A-H	RATING LABEL	[AV-F21T3]	
⚠	19	LC20413-002A-H	RATING LABEL	[AV-F21T3(-A)]	

EXPLODED VIEW



PRINTED WIRING BOARD PARTS LIST

MAIN P.W. BOARD ASS'Y (SCG-1011A-H2)

⚠ Symbol No.	Part No.	Part Name	Description	Local
RESISTOR				
R1002-03	NRSA02J-221X	MG R	220Ω 1/10W	J
R1004	NRSA02J-224X	MG R	220kΩ 1/10W	J
R1102	NRSA02J-750X	MG R	75Ω 1/10W	J
R1103	NRSA02J-100X	MG R	10Ω 1/10W	J
R1109	NRSA02J-682X	MG R	6.8kΩ 1/10W	J
R1110	NRSA02J-272X	MG R	2.7kΩ 1/10W	J
R1111	NRSA02J-181X	MG R	180Ω 1/10W	J
R1112	NRSA02J-100X	MG R	10Ω 1/10W	J
R1113	NRSA02J-101X	MG R	100Ω 1/10W	J
R1114	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1115	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
R1117	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
R1118	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
R1120	NRSA02J-391X	MG R	390Ω 1/10W	J
R1121	NRSA02J-221X	MG R	220Ω 1/10W	J
R1159	NRSA02J-184X	MG R	180kΩ 1/10W	J
R1161	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1162	NRSA02J-122X	MG R	1.2kΩ 1/10W	J
R1163	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
R1164	NRSA02J-221X	MG R	220Ω 1/10W	J
R1165	NRSA02J-220X	MG R	22Ω 1/10W	J
R1166	NRSA02J-821X	MG R	820Ω 1/10W	J
R1301	NRSA02J-221X	MG R	220Ω 1/10W	J
R1302	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1303-05	NRSA02J-101X	MG R	100Ω 1/10W	J
R1306	NRSA02J-221X	MG R	220Ω 1/10W	J
R1307	NRSA02J-122X	MG R	1.2kΩ 1/10W	J
R1308	NRSA02J-182X	MG R	1.8kΩ 1/10W	J
R1312	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
R1313-14	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1321	NRSA02J-152X	MG R	1.5kΩ 1/10W	J
R1322	NRSA02J-272X	MG R	2.7kΩ 1/10W	J
R1323	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1324	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1326	NRSA02J-101X	MG R	100Ω 1/10W	J
R1327	NRSA02J-475X	MG R	4.7MΩ 1/10W	J
R1341	NRSA02J-332X	MG R	3.3kΩ 1/10W	J
R1347	NRSA02J-392X	MG R	3.9kΩ 1/10W	J
R1349	NRSA02J-123X	MG R	12kΩ 1/10W	J
R1351-53	NRSA02J-151X	MG R	150Ω 1/10W	J
R1354-56	NRSA02J-331X	MG R	330Ω 1/10W	J
R1357-59	NRSA02J-101X	MG R	100Ω 1/10W	J
R1360-61	QRZ0107-152Z	C R	1.5kΩ 1/2W	K
R1362	QRZ0107-152Z	C R	1.5kΩ 1/2W	J
R1363-65	QRL029J-123	OM R	12kΩ 2W	J
R1366-68	NRSA02J-182X	MG R	1.8kΩ 1/10W	J
R1369	QRE121J-394Y	C R	390kΩ 1/2W	J
R1372	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
R1373	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1374	NRSA02J-392X	MG R	3.9kΩ 1/10W	J
R1401	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1421-22	NRSA02J-122X	MG R	1.2kΩ 1/10W	J
R1423	NRSA02J-331X	MG R	330Ω 1/10W	J
R1424	NRSA02J-101X	MG R	100Ω 1/10W	J
R1425	NRSA02J-471X	MG R	470Ω 1/10W	J
R1426	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
R1429	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1430	NRSA02J-823X	MG R	82kΩ 1/10W	J
R1431	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1432-33	QRE121J-2R7Y	C R	2.7Ω 1/2W	J
R1436	NRSA02J-823X	MG R	82kΩ 1/10W	J
R1440	QRE121J-471Y	C R	470Ω 1/2W	J
R1441	NRSA02J-822X	MG R	8.2kΩ 1/10W	J
R1442	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1443	QRE121J-1R0Y	C R	1.0Ω 1/2W	J
R1453	NRSA02J-272X	MG R	2.7kΩ 1/10W	J
R1501	QRE121J-181Y	C R	180Ω 1/2W	J
R1502	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J

⚠ Symbol No.	Part No.	Part Name	Description	Local
RESISTOR				
R1503	NRSA02J-682X	MG R	6.8kΩ 1/10W	J
R1521	NRSA02J-681X	MG R	680Ω 1/10W	J
R1522	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1524-25	QRL02EJ-820X	OM R	82Ω 2W	J
R1526	QRE121J-270Y	C R	27Ω 1/2W	J
R1530	QRE121J-223Y	C R	22kΩ 1/2W	J
R1531	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1533-34	NRSA02J-332X	MG R	3.3kΩ 1/10W	J
⚠ R1551	QRZ9011-1R0	F R	1.0 Ω 1/2W	J
R1552	QRJ146J-2R2X	C R	2.2Ω 1/4W	J
R1554	QRE121J-182Y	C R	1.8kΩ 1/2W	J
R1571	QRE121J-222Y	C R	2.2kΩ 1/2W	J
R1573-74	QRT02EJ-1R5X	MF R	1.5Ω 2W	J
R1576	QRE121J-223Y	C R	22kΩ 1/2W	J
R1577	NRSA02J-392X	MG R	3.9kΩ 1/10W	J
R1581	QRE121J-182Y	C R	1.8kΩ 1/2W	J
R1582	NRSA02J-223X	MG R	22kΩ 1/10W	J
R1583	NRSA02J-393X	MG R	39kΩ 1/10W	J
R1651	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1652	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1653	QRE121J-1R0Y	C R	1.0Ω 1/2W	J
R1654	QRX029J-4R7	MF R	4.7Ω 2W	J
R1656	NRSA02J-123X	MG R	12kΩ 1/10W	J
R1657	NRSA02J-391X	MG R	390Ω 1/10W	J
R1658-59	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1660	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1661-62	QRE121J-271Y	C R	270Ω 1/2W	J
R1664	NRSA02J-221X	MG R	220Ω 1/10W	J
R1665	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1701	NRSA02J-562X	MG R	5.6kΩ 1/10W	J
R1702	NRSA02J-822X	MG R	8.2kΩ 1/10W	J
R1703	NRSA02J-392X	MG R	3.9kΩ 1/10W	J
R1704-05	NRSA02J-221X	MG R	220Ω 1/10W	J
R1706-07	NRSA02J-561X	MG R	560Ω 1/10W	J
R1708	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1709-14	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1715-16	NRSA02J-221X	MG R	220Ω 1/10W	J
R1717	NRSA02J-273X	MG R	27kΩ 1/10W	J
R1718	NRSA02J-561X	MG R	560Ω 1/10W	J
R1719	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1720	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1721	NRSA02J-103X	MG R	10kΩ 1/10W	J
⚠ R1723	QRZ9023-270	F R	27 Ω 2W	J
R1725	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1726	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1727	NRSA02J-153X	MG R	15kΩ 1/10W	J
R1728-29	NRSA02J-102X	MG R	1kΩ 1/10W	J
R1730	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1731	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1736	NRSA02J-823X	MG R	82kΩ 1/10W	J
R1737	NRSA02J-104X	MG R	100kΩ 1/10W	J
R1738-39	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1740	NRSA02J-392X	MG R	3.9kΩ 1/10W	J
R1741	NRSA02J-561X	MG R	560Ω 1/10W	J
R1742	NRSA02J-563X	MG R	56kΩ 1/10W	J
R1746	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1747	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
R1748	NRSA02J-103X	MG R	10kΩ 1/10W	J
R1749	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
R1771-72	NRSA02J-821X	MG R	820Ω 1/10W	J
R1791-95	NRSA02J-221X	MG R	220Ω 1/10W	J
R1797	NRSA02J-153X	MG R	15kΩ 1/10W	J
R1802	NRSA02J-750X	MG R	75Ω 1/10W	J
R1806	QRE121J-271Y	C R	270Ω 1/2W	J
R1807	NRSA02J-680X	MG R	68Ω 1/10W	J
R1810	QRG01GJ-560	OM R	56Ω 1W	J
R1811	NRSA02J-221X	MG R	220Ω 1/10W	J
R1815	QRE121J-181Y	C R	180Ω 1/2W	J

⚠	Symbol No.	Part No.	Part Name	Description	Local
	RESISTOR				
	R1816	NRSA02J-681X	MG R	680Ω 1/10W	J
	R1817	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
	R1846	NRSA02J-103X	MG R	10kΩ 1/10W	J
	R1849	NRSA02J-153X	MG R	15kΩ 1/10W	J
⚠	R1901	QRF104K-3R9	UNF R	3.9 Ω 10W	J
	R1903	QRLO2EJ-683X	OM R	68kΩ 2W	J
	R1921	QRE121J-681Y	C R	680Ω 1/2W	J
	R1922	QRTO29J-1R2	MF R	1.2Ω 2W	J
	R1923	QRMO59J-R22	MP R	0.22 Ω 5W	J
	R1926	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
	R1928	QRLO3EJ-563X	O M R	56kΩ 3W	J
	R1929	QRE121J-822Y	C R	8.2kΩ 1/2W	J
	R1932	QRE121J-564Y	C R	560kΩ 1/2W	J
	R1933	QRE121J-180Y	C R	18Ω 1/2W	J
	R1934	NRSA02J-333X	MG R	33kΩ 1/10W	J
	R1936	QRGO1GJ-561	OM R	560Ω 1W	J
	R1941	QRE121J-821Y	C R	820Ω 1/2W	J
	R1942	NRSA02J-122X	MG R	1.2kΩ 1/10W	J
	R1943	NRSA02J-473X	MG R	47kΩ 1/10W	J
	R1944	NRSA02J-103X	MG R	10kΩ 1/10W	J
	R1974	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
	R1976	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R1977	QRE121J-122Y	C R	1.2kΩ 1/2W	J
	R1978	NRSA02J-473X	MG R	47kΩ 1/10W	J
	R1979	QRTO2EJ-2R7X	MF R	2.7Ω 2W	J
	R1980	QRLO2EJ-103X	O M R	10kΩ 2W	J
⚠	R1991	QRZ0057-825	C R	8.2MΩ 1W	J

	Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR				
	C1001	QETN1HM-106Z	E CAP.	10µF 50V	M
	C1002-03	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1004	QETN1CM-107Z	E CAP.	100µF 16V	M
	C1005	QETN1CM-227Z	E CAP.	220µF 16V	M
	C1006	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1008	QETN1HM-475Z	E CAP.	4.7µF 50V	M
	C1103	QETN1EM-476Z	E CAP.	47µF 25V	M
	C1104-07	NCB21HK-472X	C CAP.	4700pF 50V	K
	C1109	NCB21HK-472X	C CAP.	4700pF 50V	K
	C1110	NRSA02J-0ROX	MG R	0.0Ω 1/10W	J
	C1112	QETN1EM-476Z	E CAP.	47µF 25V	M
	C1113	NCB21HK-472X	C CAP.	4700pF 50V	K
	C1115-16	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1117	QFV71HJ-224Z	MF CAP.	0.22µF 50V	J
	C1119	QETN1HM-474Z	E CAP.	0.47µF 50V	M
	C1120	NDC21HJ-121X	C CAP.	120pF 50V	J
	C1121-22	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1161	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1162	NCB21HK-152X	C CAP.	1500pF 50V	K
	C1164-65	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1166	NCB21HK-104X	CHIP CAP.	0.1µF 50V	K
	C1301	NCB21HK-123X	C CAP.	0.012µF 50V	K
	C1302	QETN1HM-475Z	E CAP.	4.7µF 50V	M
	C1303	NDC21HJ-8ROX	C CAP.	8.0pF 50V	J
	C1304-05	QETN1HM-474Z	E CAP.	0.47µF 50V	M
	C1306	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1307	QETN1CM-477Z	E CAP.	470µF 16V	M
	C1308	QETN1CM-107Z	E CAP.	100µF 16V	M
	C1309	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1310	NDC21HJ-221X	C CAP.	220pF 50V	J
	C1311	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1312	QENC1HM-474Z	BP E CAP.	0.47µF 50V	M
	C1313	QETN1HM-335Z	E CAP.	3.3µF 50V	M
	C1314	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1315	QETN1CM-107Z	E CAP.	100µF 16V	M
	C1316	QETN1HM-106Z	E CAP.	10µF 50V	M
	C1317	NCB21HK-473X	C CAP.	0.047µF 50V	K
	C1321	NDC21HJ-120X	C CAP.	12pF 50V	J
	C1322	NCB21HK-273X	C CAP.	0.027µF 50V	K
	C1323	QETN1HM-225Z	E CAP.	2.2µF 50V	M

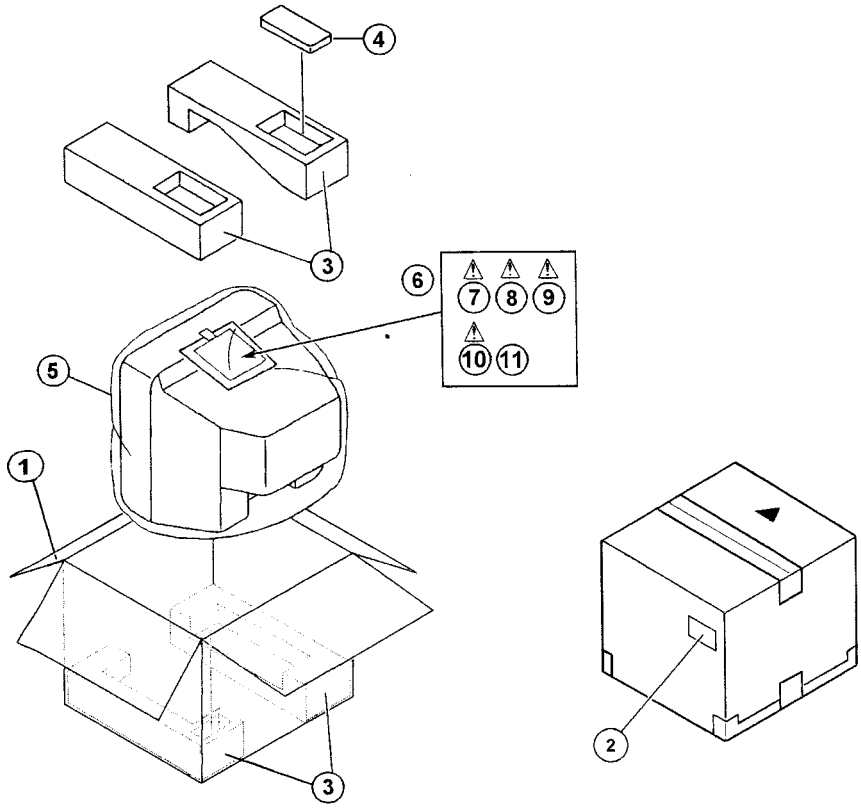
⚠	Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR				
	C1324	QETN1HM-106Z	E CAP.	10µF 50V	M
	C1325	QENC1HM-106Z	BP E CAP.	10µF 50V	M
	C1326	NCS21HJ-221X	C CAP.	220pF 50V	J
	C1341	QETN1HM-106Z	E CAP.	10µF 50V	M
	C1352	QFZ0097-103	MM CAP.	0.01µF 1250V	K
	C1354-56	NDC21HJ-271X	C CAP.	270pF 50V	J
	C1357	QETN1AM-477Z	E CAP.	470µF 10V	M
	C1365-67	QENC1HM-105Z	BP E CAP.	1µF 50V	M
	C1401	QFV71HJ-474Z	MF CAP.	0.47µF 50V	J
	C1402	QFV71HJ-104Z	MF CAP.	0.1µF 50V	J
	C1422	QETN1HM-105Z	E CAP.	1µF 50V	M
	C1423	QCS32HJ-100Z	C CAP.	10pF 500V	J
	C1424	QFLC2AJ-103Z	M CAP.	0.01µF 100V	J
	C1426	QFLC1HJ-103Z	M CAP.	0.01µF 50V	J
	C1427	QETN1VM-107Z	E CAP.	100µF 35V	M
	C1428	QEHR1VM-107Z	E CAP.	100µF 35V	M
	C1429	QETN1HM-106Z	E CAP.	10uF 50V	M
	C1430	QFN32AJ-472Z	M CAP.	4700pF 100V	J
	C1433	QEHR1HM-475Z	E CAP.	4.7µF 50V	M
	C1435	QETM1EM-228	E CAP.	2200µF 25V	M
	C1436	QFV71HJ-334Z	MF CAP.	0.33µF 50V	J
	C1501	QETN1EM-476Z	E CAP.	47µF 25V	M
	C1502	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1503	QETN1HM-106Z	E CAP.	10µF 50V	M
	C1523	QTMN1VM-476Z	E CAP.	47µF 35V	M
⚠	C1525	QFZ0117-1142	MPP CAP.	.0114µF1.4kVH±2.5%	
	C1526	QTMN1EM-337Z	E CAP.	370µF 25V	M
⚠	C1527	QFZ0199-404	MPP CAP.	0.4µF 250V	J
	C1528	QETN2EM-475Z	E CAP.	4.7µF 250V	M
	C1531	QEZ0203-107	E CAP.	100µF 160V	M
	C1552	QETM1VM-108	E CAP.	1000uF 35V	M
	C1554	QETN2EM-475Z	E CAP.	4.7µF 250V	M
	C1555	QFLC2AJ-104Z	M CAP.	0.1µF 100V	J
	C1571	QETN1AM-107Z	E CAP.	100µF 10V	M
	C1572	QETN1EM-476Z	E CAP.	47µF 25V	M
	C1581	QFV71HJ-104Z	MF CAP.	0.1µF 50V	J
	C1651	QTNC1HM-105Z	E CAP.	1µF 50V	M
	C1652	QEHR1HM-106Z	E CAP.	10µF 50V	M
	C1653	QEHR1VM-476Z	E CAP.	47µF 35V	M
	C1654	NCB21HK-104X	CHIP CAP.	0.1µF 50V	K
	C1655	QEHQ1VM-228	E CAP.	2200µF 35V	M
	C1656	QEHR1EM-477Z	E CAP.	470µF 25V	M
	C1658	QETN1HM-226Z	E CAP.	22µF 50V	M
	C1659	QETN1CM-107Z	E CAP.	100µF 16V	M
	C1663	QEHR1HM-106Z	E CAP.	10µF 50V	M
	C1664	NCB21HK-104X	CHIP CAP.	0.1µF 50V	K
	C1665	QEHR1HM-105Z	E CAP.	1µF 50V	M
	C1701	QETN1HM-106Z	E CAP.	10µF 50V	M
	C1705	QETN1CM-477Z	E CAP.	470µF 16V	M
	C1706	NCB21EK-104X	C CAP.	0.1µF 25V	K
	C1707	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1708	QETN1EM-476Z	E CAP.	47µF 25V	M
	C1709	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1710	QETN1CM-107Z	E CAP.	100µF 16V	M
	C1711-13	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1714-15	NDC21HJ-330X	C CAP.	33pF 50V	J
	C1716-17	NDC21HJ-181X	C CAP.	180pF 50V	J
	C1718	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1719	QETN1HM-105Z	E CAP.	1µF 50V	M
	C1720	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1721	NCB21HK-333X	C CAP.	0.033µF 50V	K
	C1722	NCB21HK-102X	C CAP.	1000pF 50V	K
	C1724	NDC21HJ-560X	C CAP.	56pF 50V	J
	C1728-29	NDC21HJ-181X	C CAP.	180pF 50V	J
	C1730	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1738	QETN1HM-226Z	E CAP.	22µF 50V	M
	C1741-43	QETN1HM-105Z	E CAP.	1µF 50V	M
	C1744	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C1805	QETN1CM-227Z	E CAP.	220µF 16V	M
	C1806	QETN1CM-477Z	E CAP.	470µF 16V	M
	C1811	QETN1HM-106Z	E CAP.	10µF 50V	M
	C1841	NCB21HK-152X	C CAP.	1500pF 50V	K

⚠	Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR				
⚠	C1901	QFZ9040-104	MF CAP.	0.1μFAC250V	M
⚠	C1904	QCZ9082-222Z	C CAP.	2200pFAC250V	M
⚠	C1905	QCZ9082-222Z	C CAP.	2200pFAC250V	M
⚠	C1907	QCZ9082-222Z	C CAP.	2200pFAC250V	M
⚠	C1909	QEZ0199-127	E CAP.	120μF 400V	M
⚠	C1910	QFZ9040-473	MM CAP.	470μFAC250V	M
	C1922	QFLC1HJ-471Z	M CAP.	470pF 50V	J
	C1924	QETN1VM-107Z	E CAP.	100μF 35V	M
	C1926	QFLC1HJ-332Z	M CAP.	3300pF 50V	J
	C1928	NCB21HK-473X	C CAP.	0.047μF 50V	K
	C1929	QFP32GJ-223Z	PP CAP.	0.022μF 400V	J
	C1930	QCZ0325-561	C CAP.	560pF 2kV	K
	C1931-32	QCZ0325-151	C CAP.	150pF 2kV	K
	C1941	QCZ0122-561	C CAP.	560pF 2kV	K
	C1942	QEZ0420-107	E CAP.	100μF 160V	M
	C1945	QEHR1CM-108Z	E CAP.	1000μF 16V	M
	C1948	QEHR1VM-108Z	E CAP.	1000μF 35V	M
	C1949	NDC21HJ-471X	C CAP.	470pF 50V	J
	C1950	NCB21HK-104X	CHIP CAP.	0.1μF 50V	K
	C1971	QETN1HM-475Z	E CAP.	4.7μF 50V	M
	C1976	QETN1HM-105Z	E CAP.	1μF 50V	M
	C1977	QETN1CM-107Z	E CAP.	100μF 16V	M
	C1978	QETN1CM-227Z	E CAP.	220μF 16V	M
	C1979	QETN1CM-107Z	E CAP.	100μF 16V	M
⚠	C1991	QCZ9079-471	C CAP.	470pFAC250V	K
⚠	C1992	QCZ9079-471	C CAP.	470pFAC250V	K
⚠	C1993	QCZ9079-102	C CAP.	1000pFAC250V	K
	TRANSFORMER				
⚠	T1522	QQH0021-002	FB TRANSF.		
⚠	T1921	QQS0050-001	SW TRANSF.		
	COIL				
	L1001-02	QQL244K-8R2Z	COIL	8.2μH	
	L1101	QQLZ014-2R2	PEAKING COIL		
	L1103	QQL244K-8R2Z	COIL	8.2μH	
	L1351-53	QQL244K-470Z	COIL	47μH	
	L1523	QQL342J-2R2Z	INDUCTOR		
	L1551	QQLZ018-430	HEATER CHOKE		
	L1701	QQL39BK-5R6Z	COIL	5.6μH	
	L1941-42	QQL26AK-820Z	COIL	82μH	
	DIODE				
	D1001	MA3330/L/-X	ZENER DIODE		
	D1102	1SS85-T2	SI.DIODE		
	D1301-02	MA3091/M/-X	ZENER DIODE		
	D1305	RB100A-T2	SI.DIODE		
	D1341-42	MA111-X	SI.DIODE		
	D1351-53	MA3056/L/-X	ZENER DIODE		
	D1354-56	MA111-X	SI.DIODE		
	D1421-22	MA3360/M/-X	ZENER DIODE		
	D1423	1SR124-400A-T2	SI.DIODE		
	D1424-25	MA111-X	SI.DIODE		
	D1427	MA3270/H/-X	ZENER DIODE		
	D1551	RGP10J-TS-T3	SI.DIODE		
	D1552	RH1S-T3	SI.DIODE		
	D1553	MA3091/M/-X	ZENER DIODE		
	D1554	MA111-X	SI.DIODE		
	D1555	1SR124-400A-T2	SI.DIODE		
	D1571	MA3075/M/-X	ZENER DIODE		
	D1581	MA3200/M/-X	CHIP ZENER DIODE		
	D1582	RGP10J-TS-T3	SI.DIODE		
	D1651-52	MA111-X	SI.DIODE		
	D1653	MA3180/M/-X	ZENER DIODE		
	D1701	MA111-X	SI.DIODE		
	D1704	SLR-342VR-T16	L.E.D.		
	D1705	SLR-342DU-T16	L.E.D.(ORG)		
	D1706-07	MA111-X	SI.DIODE		
	D1731	MA111-X	SI.DIODE		
	D1791-95	MA3056/M/-X	ZENER DIODE		
⚠	D1901	D2SBA60	BRIDGE DIODE		
	D1921	RGP10J-TS-T3	SI.DIODE		
	D1922-24	MA111-X	SI.DIODE		

⚠	Symbol No.	Part No.	Part Name	Description	Local
	DIODE				
	D1926	MA3056/M/-X	ZENER DIODE		
	D1927	MA3068/M/-X	ZENER DIODE		
	D1929	RD12E/B2/-T5	ZENER DIODE		
	D1930	EG1A-T3	SI.DIODE		
	D1932	MA111-X	SI.DIODE		
	D1933	RD27E/B2/-T5	ZENER DIODE		
	D1941	RU3AM-LFC4	SI.DIODE		
	D1942	RU3YX-LFC4	SI.DIODE		
	D1943	RGP10J-TS-T3	SI.DIODE		
	D1945	MA3075/H/-X	ZENER DIODE		
	D1982-83	MA111-X	SI.DIODE		
	TRANSISTOR				
	Q1102	2SC5083/L-P/-T	SI.TRANSISTOR		
	Q1103	DTC124EKA-X	DIGI.TRANSISTOR		
	Q1161	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1301	2SA1037AK/QR/-X	SI.TRANSISTOR		
	Q1302	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1351-53	2SC3620	SI.TRANSISTOR		
	Q1401	DTC124ESA-T	DIGI.TRANSISTOR		
	Q1402	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1521	2SK3065-W	CHIP FET		
⚠	Q1522	BU808DFI-03QY	POWER TRANSISTOR		H.OUT
	Q1523-24	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1571	2SA949/Y/Z1-T	SI.TRANSISTOR		
	Q1572	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1651	2SA1037AK/QR/-X	SI.TRANSISTOR		
	Q1652	DTC323TK-X	DIGI.TRANSISTOR		
	Q1654-55	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1701	2SC2785/JH/-T	SI.TRANSISTOR		
	Q1702-03	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1708	DTC124EKA-X	DIGI.TRANSISTOR		
	Q1709	2SA1037AK/QR/-X	SI.TRANSISTOR		
	Q1803	2SC1815/YG/-T	SI.TRANSISTOR		
	Q1804	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1821	-	-		
	Q1941	2SC2412K/QR/-X	SI.TRANSISTOR		
	Q1943	DTC114EKA-X	DIGI.TRANSISTOR		
	Q1974	2SA966/OY/-T	SI.TRANSISTOR		
	Q1975	DTC124EKA-X	DIGI.TRANSISTOR		
	IC				
	IC1301	NN5198K	I C		
	IC1421	AN5539-LF	I C		
	IC1651	LA4287	I C		
	IC1652	SI-5001X-W	I C		
	IC1701	MN1873287JX	I C		
	IC1702	AT24C08-F21TR3	I.C.		(SERVICE)
	IC1703	L78LR05E-MA	I.C.(MONO-ANA)		
	IC1704	PIC-28143SY	IR DETECT UNIT		
	IC1921	STR-G6653	I C		
	IC1941	SE115N-LF12	I C		
	IC1971	BA51W12ST-V5	I C		
	OTHERS				
		LC30114-001C-H	L.E.D.HOLDER		
		CM35921-005-H	CDS HOLDER		
	CF1161	SFSH4.5MCB	CERAMIC FILTER		
⚠	CP1981	ICP-N75-Y	I.C.PROTECT		
⚠	CP1982	ICP-N75-Y	I.C.PROTECT		
⚠	F1901	QMF51E2-3R15J4	FUSE		3.15A
	FC1901	CEMG002-001Z	FUSE CLIP		
	J1002	CEMN075-001	PIN JACK		
	J1003	CEMN065-001	PIN JACK		
	J1004	CEMN065-002	PIN JACK		
	J1005	QMS3004-C01	HEADPHONE JACK		
	K1001	CE41433-001Z	BEADS CORE		
	K1351	CE41433-001Z	BEADS CORE		
	K1421	CE42050-001Z	CORE		
	K1921-22	QQR0872-001Y	FERRITE BEADS		
	K1923	QQR0716-001Z	LEAD CORE		
	K1924	QQR0872-001Y	FERRITE BEADS		
	K1941-43	QQR0872-001Y	FERRITE BEADS		

⚠	Symbol No.	Part No.	Part Name	Description	Local
	OTHERS				
⚠	LF1901	QQR0527-002	LINE FILTER		
	PC1701	P1241-04	C.D.S.		
⚠	PC1921	PC123F2	I.C.(PH.COUPLER)		
	S1701	QSW0619-003Z	PUSH SWITCH	VOL +	
	S1702	QSW0619-003Z	PUSH SWITCH	VOL -	
	S1703	QSW0619-003Z	PUSH SWITCH	CH +	
	S1704	QSW0619-003Z	PUSH SWITCH	CH -	
	S1705	QSW0619-003Z	PUSH SWITCH	MENU	
⚠	S1901	QSW0750-001	PUSH SWITCH	POWER SW	
	SF1102	QAX0594-001	SAW FILTER		
	SF1122	QAX0325-001	SAW FILTER		
⚠	SK1351	CE42446-001	CRT SOCKET		
⚠	TH1901	CEKP002-003	W.P.THERMISTOR		
	Tu1001	QAU0094-001	U/V TUNER		
⚠	VA1901	ERZV10V621CS	VARISTOR		
	W1136	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1155	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1231	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1270	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1276-77	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1286	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1294-95	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1338	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1422	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1427	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1527	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1529-30	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1541	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1549	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1553	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1573-74	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1581	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1583	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1586	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1590-93	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1595	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1599	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	W1600-01	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	X1301	QAX0500-001Z	CRYSTAL		
	X1302	CE42690-001Z	CRYSTAL		
	X1701	FCR12.0M2S	CER.RESONATOR		
	Y1302	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	Y1372-74	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	Y1704	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	Y1921	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	Y1941-42	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	Y1945	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	
	Y1972	NRSA02J-0R0X	MG R	0.0Ω 1/10W J	

PACKING



PACKING PARTS LIST

AV-F21M3 / AV-F21M3(-A)

⚠	Ref.No.	Part No.	Part Name	Description	Local
	1	LC10453-014A-H	PACKING CASE	[AV-F21M3]	
	1	CP11781-061-H	PACKING CASE	[AV-F21M3(-A)]	
	2	CM47385-00B-H	POS/SERIAL LABEL		
	3	LC10516-002A-H	CUSSION ASSY	4pcs in 1set	
	4	RM-C364-1H	REMOCON UNIT		
	5	CP30967-003-H	POLY BAG		
	6	CP30966-001-H	POLY BAG		
⚠	7	LCT0404-001A-H	INST BOOK		
⚠	8	LCT0405-001A-H	INST BOOK	[AV-F21M3]ONLY	
⚠	9	LCT0443-001A-H	DIGEST MANUAL	[AV-F21M3(-A)]ONLY	
	11	QAM0055-001	CONVERSION PLUG	[AV-F21M3(-A)]ONLY	

AV-F21T3 / AV-F21T3(-A)

⚠	Ref.No.	Part No.	Part Name	Description	Local
	1	LC10453-020A-H	PACKING CASE	[AV-F21T3]	
	1	CP11781-070-H	PACKING CASE	[AV-F21T3(-A)]	
	2	CM47385-00B-H	POS/SERIAL LABEL		
	3	LC10516-002A-H	CUSSION ASSY	4pcs in 1set	
	4	RM-C364-1H	REMOCON UNIT		
	5	CP30967-003-H	POLY BAG		
	6	CP30966-001-H	POLY BAG		
⚠	7	LCT0404-001A-H	INST BOOK		
⚠	9	LCT0443-001A-H	DIGEST MANUAL	[AV-F21T3(-A)]ONLY	
⚠	10	LCT0440-001A-H	DIGEST MANUAL	[AV-F21T3]ONLY	
	11	QAM0055-001	CONVERSION PLUG	[AV-F21T3(-A)]ONLY	

AV-F21M3/AV-F21M3(-A)/AV-F21T3/AV-F21T3(-A) STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1. SAFETY

The components identified by the⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal	: Colour bar signal
(2)Setting positions of each knob/button and variable resistor	:Original setting position when shipped
(3)Internal resistance of tester	:DC 20kΩ/V
(4)Oscilloscope sweeping time	:H ⇒ 20μS/div
	:V ⇒ 5mS/div
	:Others ⇒ Sweeping time is specified
(5)Voltage values	:All DC voltage values

＊Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

●In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

●Resistance value

No unit	:[Ω]
K	:[KΩ]
M	:[MΩ]

●Rated allowable power

No indication	:1/10[W]
Others	:As specified

●Type

No indication	:Carbon resistor
OMR	:Oxide metal film resistor
MFR	:Metal film resistor
MPR	:Metal plate resistor
UNFR	:Uninflammable resistor
FR	:Fusible resistor

*Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

●Capacitance value

1 or higher	:[pF]
less than 1	:[μF]

●Withstand voltage

No indication	:DC50[V]
AC indicated	:AC withstand voltage [V]
Others	:DC withstand voltage [V]

*Electrolytic Capacitors

47/50[Example]:Capacitance value [μF]/withstand voltage[V]

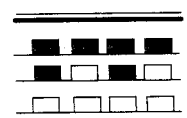
●Type

No indication	:Ceramic capacitor
MY	:Mylar capacitor
MM	:Metalized mylar capacitor
PP	:Polypropylene capacitor
MPP	:Metalized polypropylene capacitor
MF	:Metalized film capacitor
TF	:Thin film capacitor
BP	:Bipolar electrolytic capacitor
TAN	:Tantalum capacitor

(3)Coils

No unit	:[μH]
Others	:As specified

(4)Power Supply



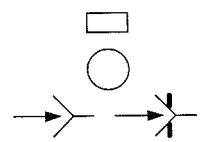
:B1
:12V
:9V
:5V

*Respectively voltage values are indicated

(5)Test point

:Test point
:Only test point display

(6)Connecting method



:Connector
:Wrapping or soldering
:Receptacle

(7)Ground symbol

⊥ :LIVE side ground
⏚ :ISOLATED(NEUTRAL) side ground
⏚ :EARTH ground
▽ :DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND. Therefore, care must be taken for the following points.

(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.

◇ **Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.**

Oct. 1999 No.51643

CONTENTS

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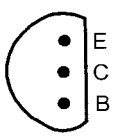
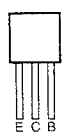
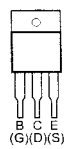
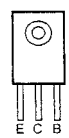
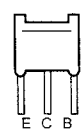
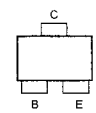
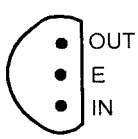
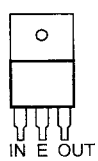
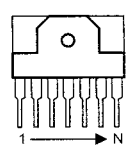
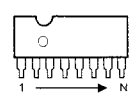
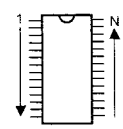
PATTERN DIAGRAMS
MAIN PWB PATTERN 2-9
CRT SOCKET PWB PATTERN 2-11

SEMICONDUCTOR SHAPES

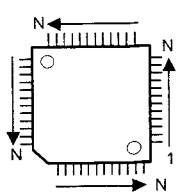
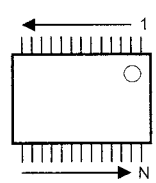
TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR 

IC

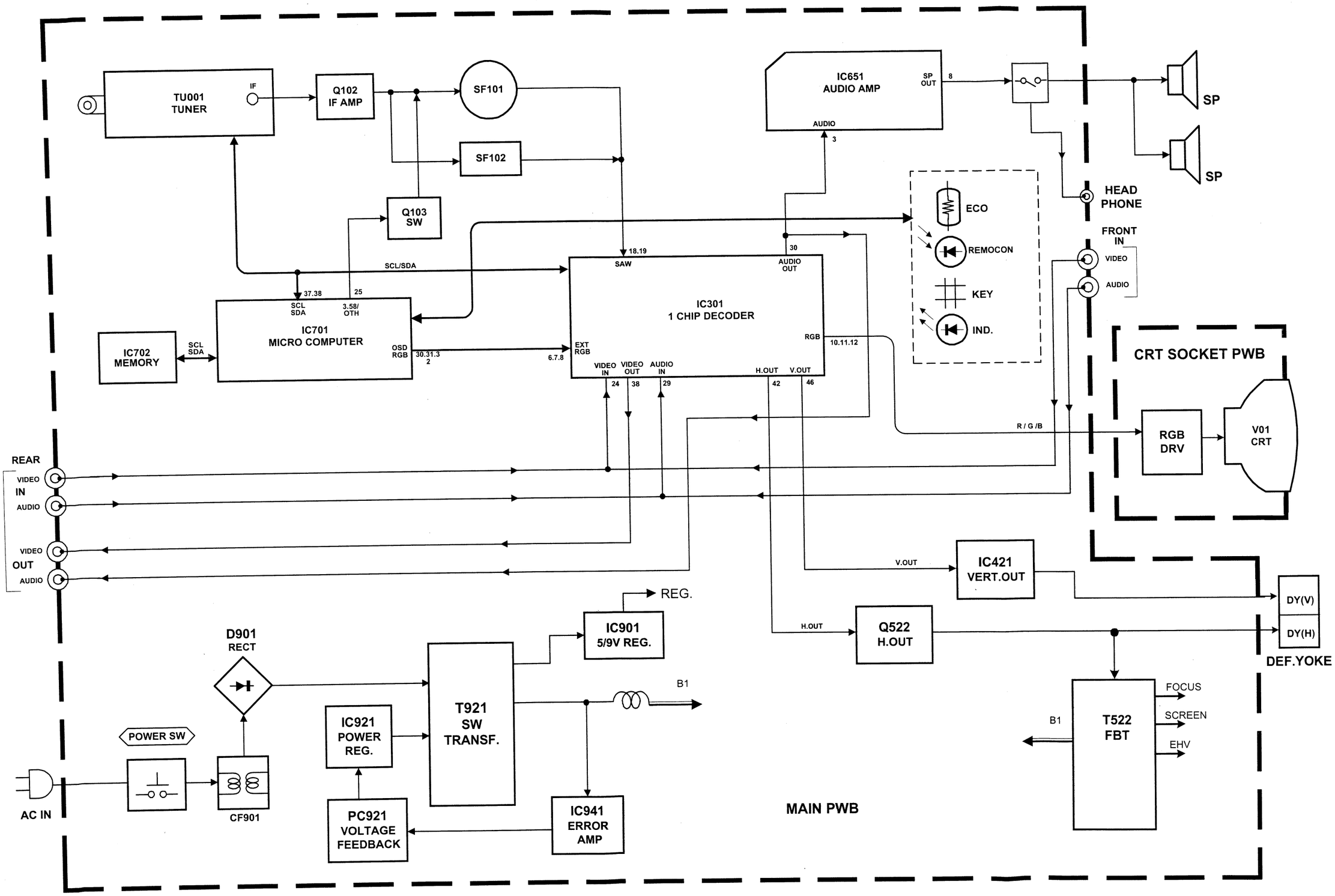
BOTTOM VIEW	FRONT VIEW			TOP VIEW
				

CHIP IC

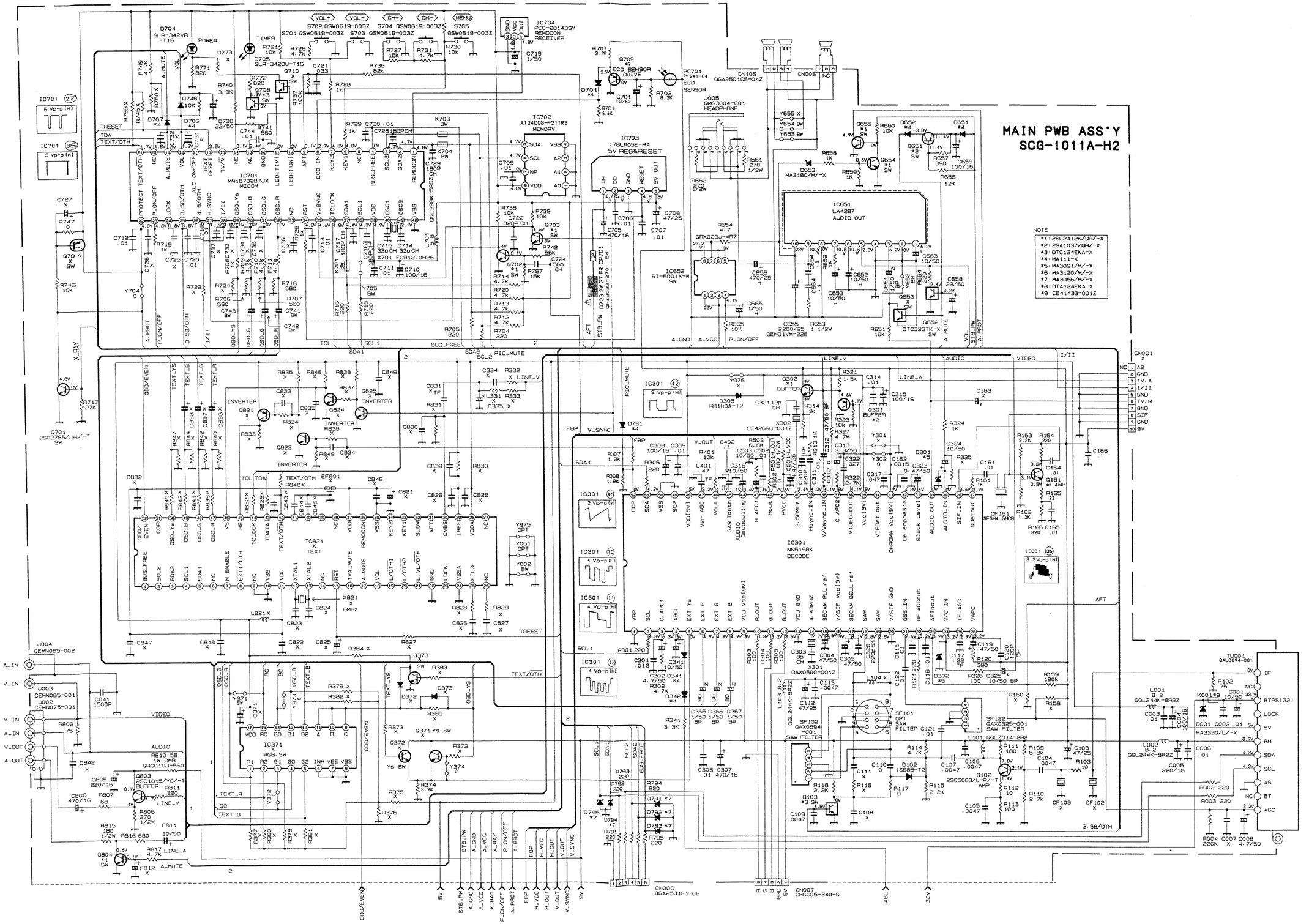
TOP VIEW		
		

AV-F21M3
AV-F21T3

BLOCK DIAGRAM

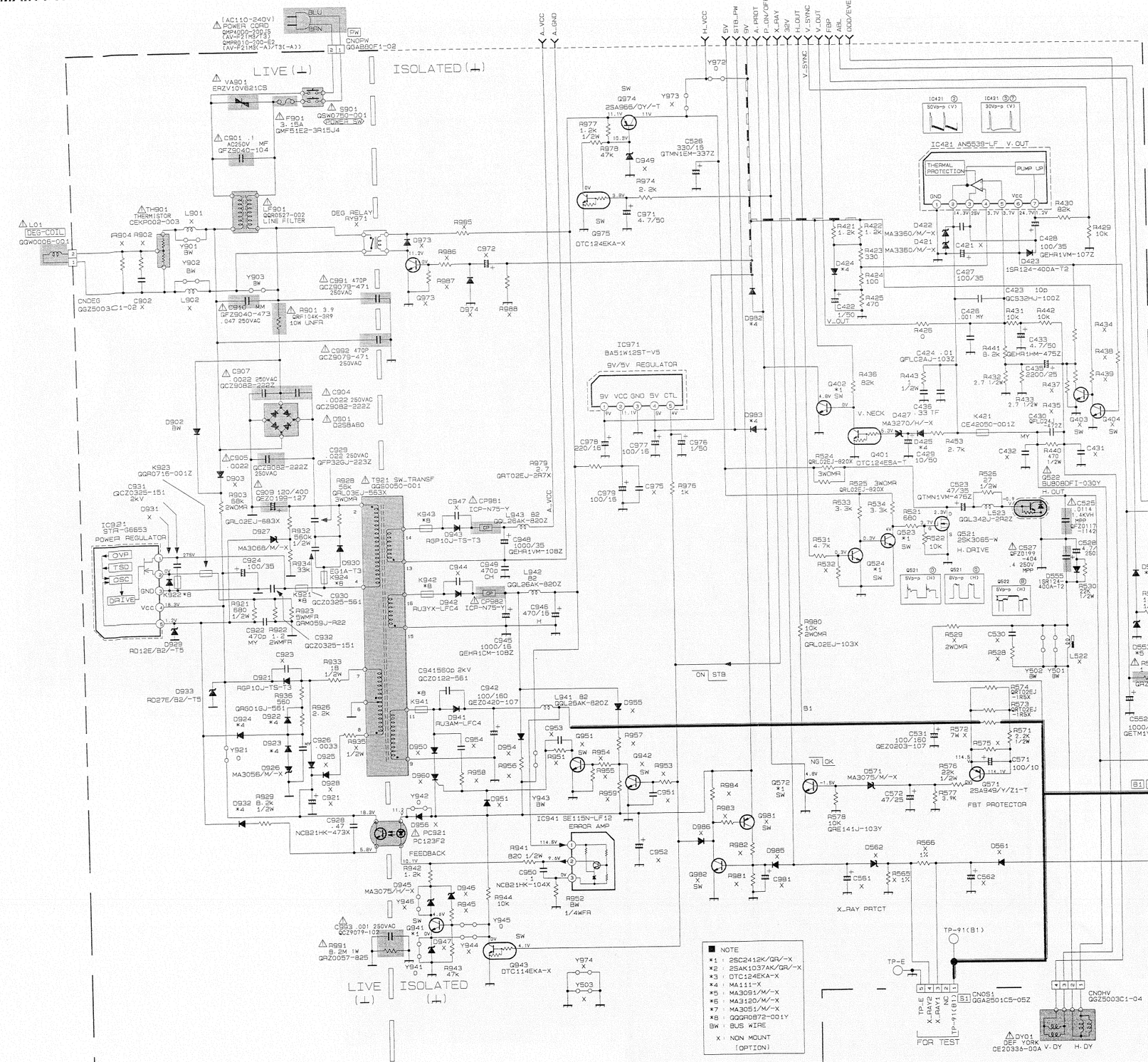


CIRCUIT DIAGRAMS *MAIN PWB CIRCUIT DIAGRAMS* [1/2]



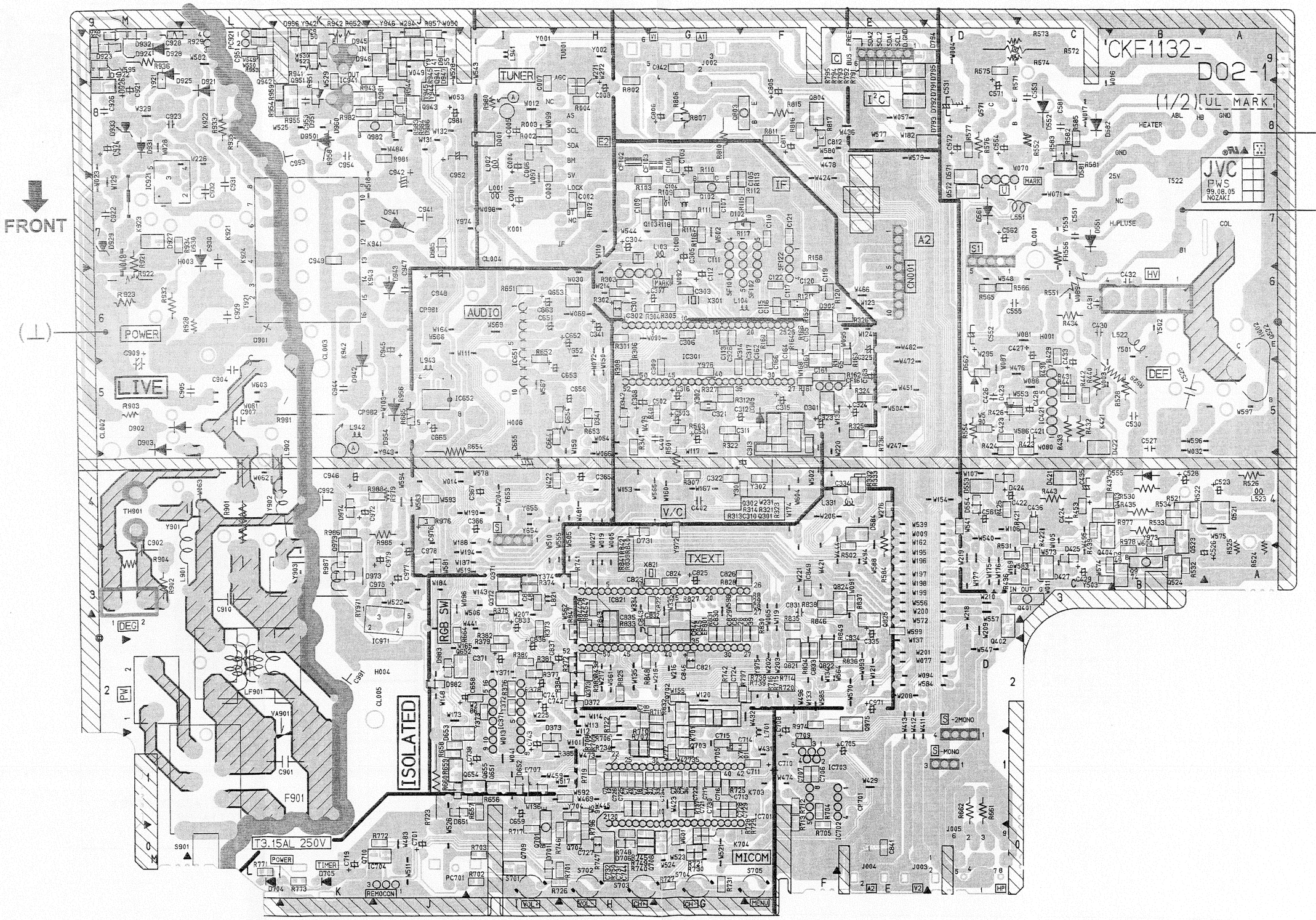
AV-F21M3
AV-F21T3

MAIN PWB CIRCUIT DIAGRAMS [2/2]

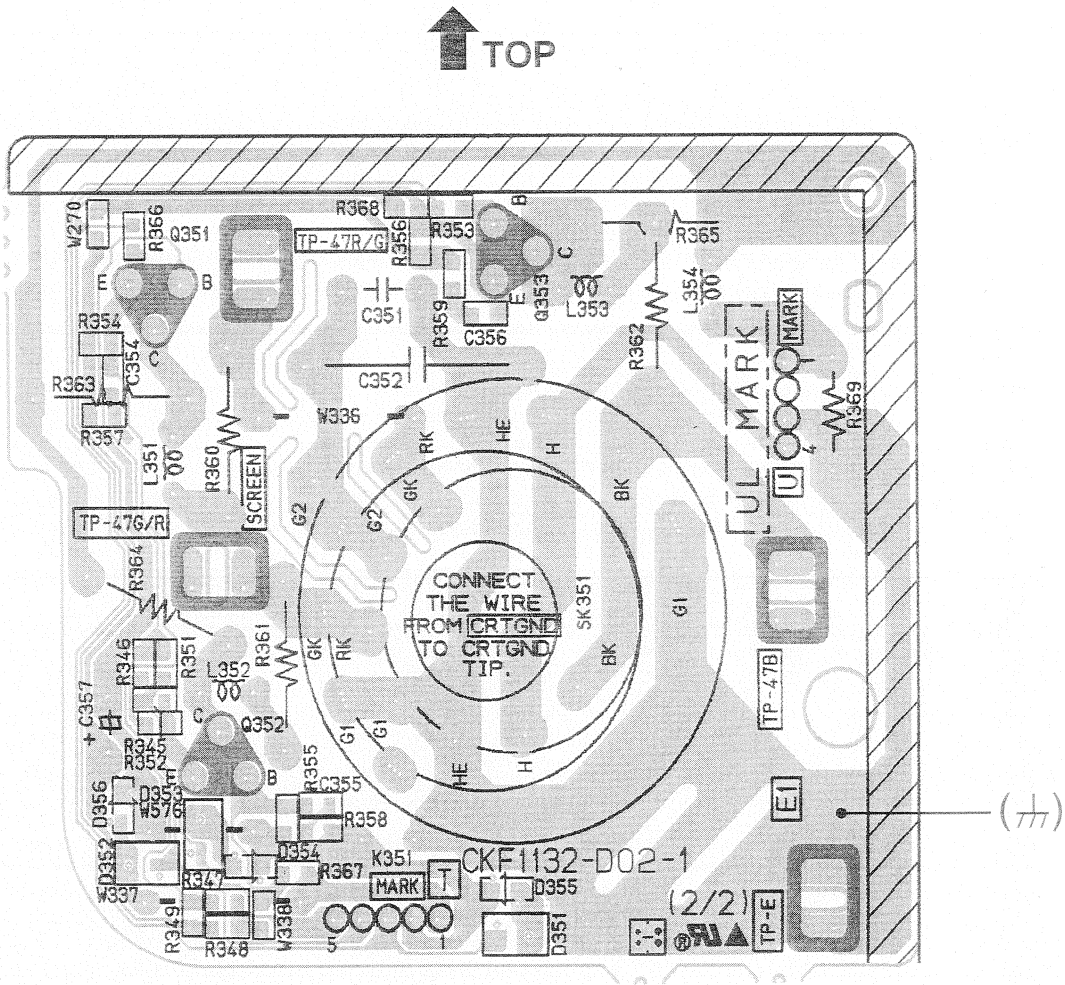


AV-F21M3
AV-F21T3

PATTERN DIAGRAMS *MAIN PWB PATTERN*



CRT SOCKET PWB PATTERN [Within MAIN PWB]



OPERATING INSTRUCTIONS

JVC

COLOUR TELEVISION

AV-A21M3
AV-A21T3
AV-F21M3
AV-F21T3
AV-F21AU3
AV-K14M3
AV-K14T3

INSTRUCTIONS

Thank you for purchasing this JVC colour television.
To ensure your complete understanding, please read this manual thoroughly before operation.

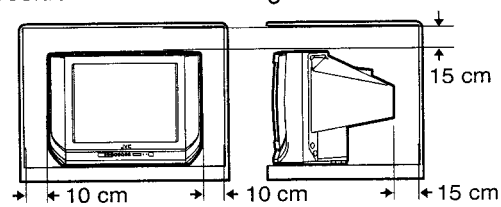
Locations 2
Preparation 4
Viewing a Television programme 13
Viewing Images from an External Device 15
Sound and Picture 16
Other Features 18
Troubleshooting 24
Specifications 25

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

- TO ENSURE PERSONAL SAFETY, OBSERVE THE FOLLOWING RULES REGARDING THE USE OF THIS TV.
- Operate only from the power source specified on the TV.
- Avoid damaging the power plug and power cord.
- Avoid improper installation and never position this TV where good ventilation is unattainable. When installing this TV distance recommendations must be maintained between the floor and wall, as well as installment in a tightly enclosed area or piece of furniture. Adhere to the minimum distance guidelines shown for safe operation.



- Do not allow objects or liquid into the cabinet openings.
- In the event of a fault, unplug this TV and call a service technician. Do not attempt to repair it by yourself or remove the rear cover.
- When you don't use this TV for a long period of time, be sure to disconnect the power plug from the AC outlet.

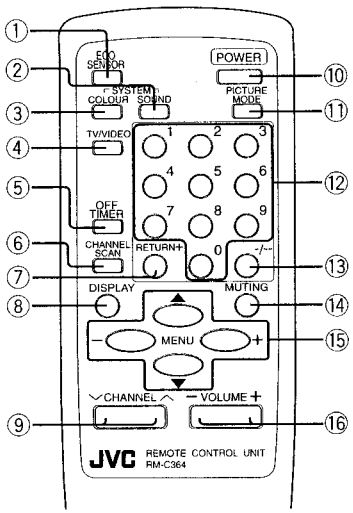
LCT00585-001A-H
0999-Ki-AB-NV-JMT

OCT.1999

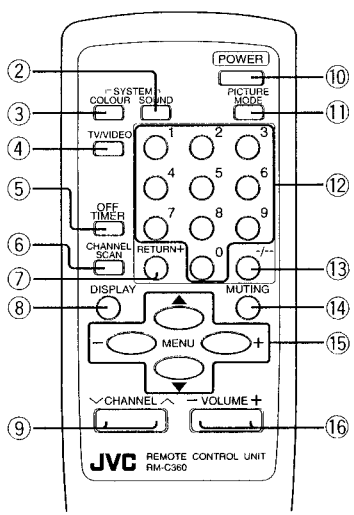
Locations

Locations of remote control buttons

<RM-C364>



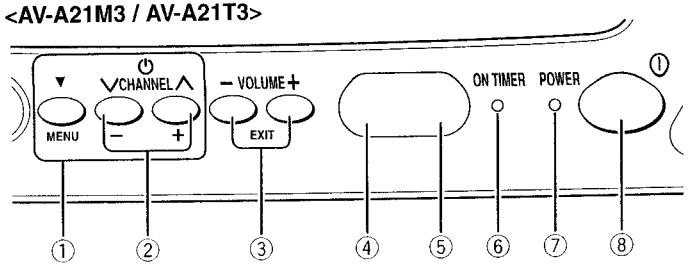
<RM-C360>



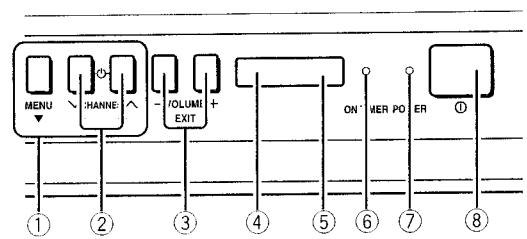
① ECO SENSOR button	p.18
② SOUND SYSTEM button	p.16
③ COLOUR SYSTEM button	p.16
④ TV/VIDEO button	p.15
⑤ OFF TIMER button	p.18
⑥ CHANNEL SCAN button	p.14
⑦ RETURN + button	p.19
⑧ DISPLAY button	p.18
⑨ CHANNEL ∨/∧ buttons	p.13
⑩ POWER button	p.7,13,14
⑪ PICTURE MODE button	p.16
⑫ Number buttons	p.13
⑬ -/-- button	p.13
⑭ MUTING button	p.14
⑮ MENU buttons • MENU ▲/▼ buttons • MENU –/+ buttons	
⑯ VOLUME –/+ buttons	p.14

Locations of front panel buttons and lamps

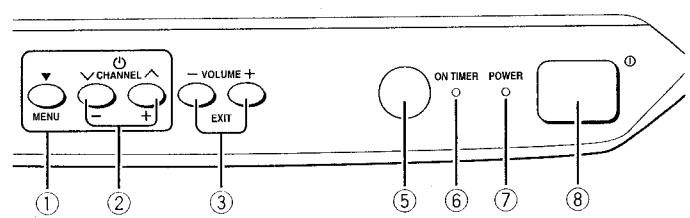
<AV-A21M3 / AV-A21T3>



<AV-F21M3 / AV-F21T3 / AV-F21AU3>



<AV-K14M3 / AV-K14T3>



① MENU buttons • MENU button • MENU –/+ buttons	p.23
② CHANNEL ∨/∧ buttons	p.14
③ VOLUME –/+ buttons	p.14
④ ECO sensor	
⑤ Remote control sensor	
⑥ ON TIMER lamp	p.20
⑦ POWER lamp	p.7,14
⑧ Main power button	p.7,14

Preparation

1. Connecting the aerial and external devices

Notes:

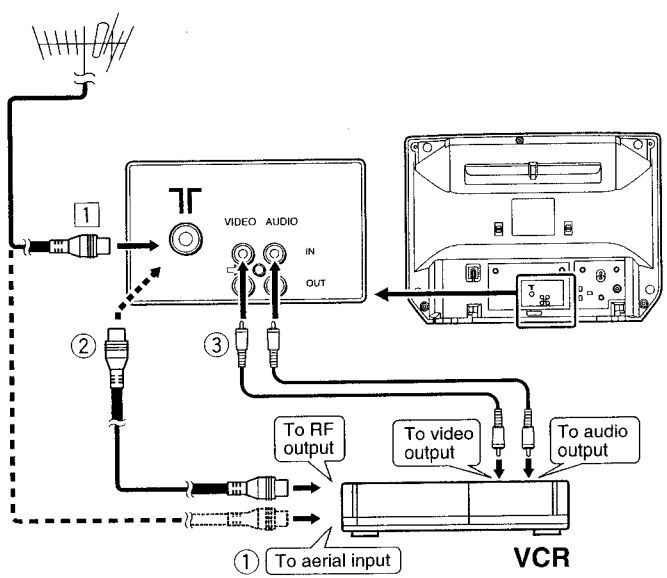
- For further details, refer to the manuals provided with the devices you are connecting.
- Connecting cables are not supplied.
- The front and rear AUDIO/VIDEO input jacks are directly connected so that input to either jack is output through both. You cannot provide input to both the front and rear jacks at the same time. Disconnect one input, or use one of the jacks as an output jack only (for monitoring or recording).

■ Connecting the aerial and VCR

If not connecting a VCR (video cassette recorder), do 1.
If connecting a VCR, proceed ① → ② → ③.

- You can view images from the VCR without doing ③. For details, see "To view images from a VCR connected to the TV with only an aerial cable" on page 15.

VHF/UHF outdoor aerial



Note:

- The rod aerial is supplied with the AV-K14M3/AV-K14T3.

If not connecting a VCR (video cassette recorder), do 1.
If connecting a VCR, proceed ① → ② → ③.

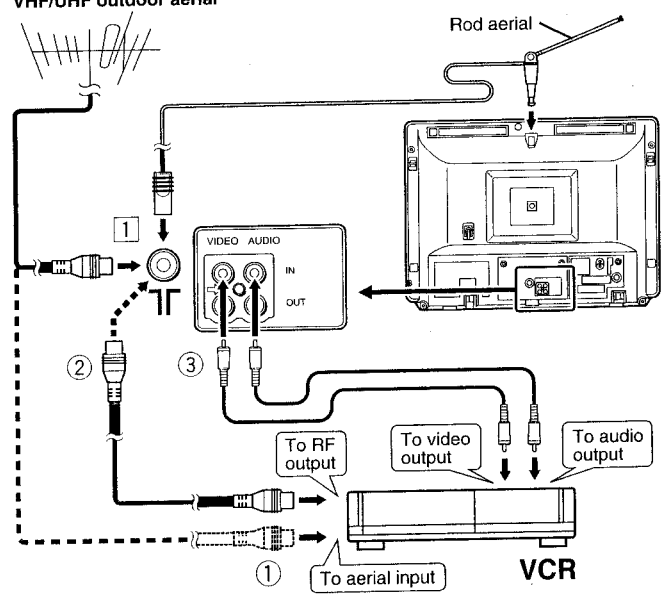
- You can view images from the VCR without doing ③. For details, see "To view images from a VCR connected to the TV with only an aerial cable" on page 15.

To install rod aerial:
Install into the top-rear aerial holder. Once installed, it cannot be removed.

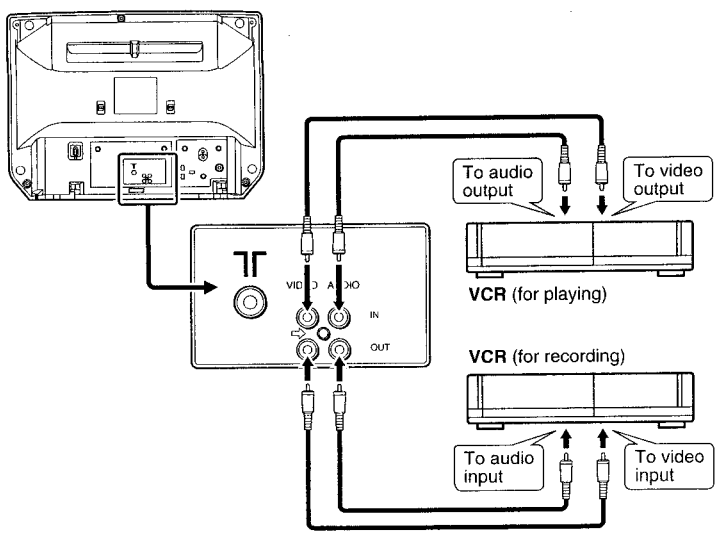
<AV-K14M3 / AV-K14T3>

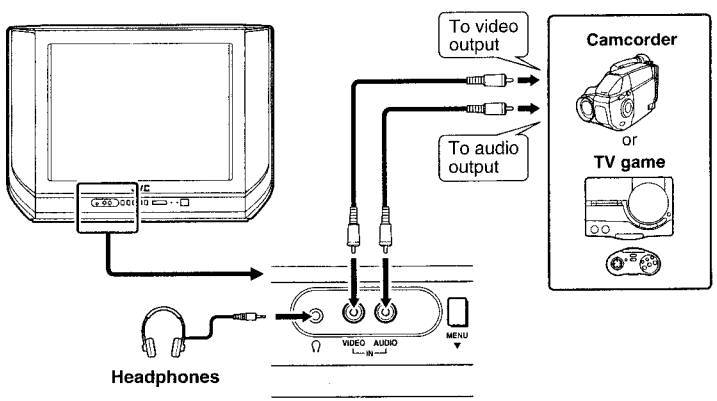
VHF/UHF outdoor aerial

Indoor aerial



■ Connecting other external devices





Note:

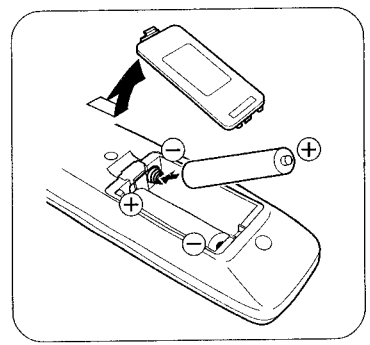
- Use headphones with a mini jack (dia. 3.5 mm). When using headphones, the speaker sound output is disabled.

2. Connecting the power cord

Insert the Power plug into an AC outlet.

3. Inserting batteries into the remote control

Correctly insert two batteries, observing the ⊕ and ⊖ polarities and inserting the ⊖ end first.



CAUTION:

- Follow the cautions printed on the batteries.

Notes:

- Use AA/R6/UM-3 dry cell batteries.
- Battery life is approximately six months to one year depending on frequency of use.
- If the remote control operates erratically, replace the batteries.
- We recommend that you use the supplied batteries initially and replace them as soon as operation becomes erratic. The supplied batteries are for testing, not regular use.

4. Turning your TV on

1. Press the Main power button on the TV to turn the TV's main power on.

The POWER lamp lights red.

If image does not appear:

Your TV is in the standby mode. Press the POWER button on the remote control to turn your TV on.

- You can also turn on your TV by pressing the CHANNEL ∨/∧ button on your TV.

To turn your TV off:

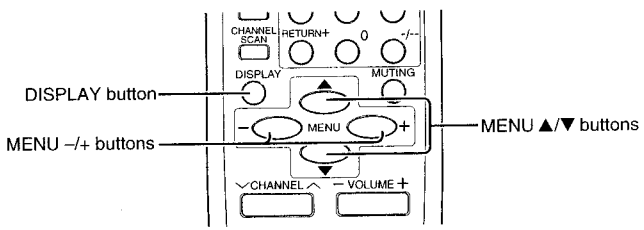
Press the POWER button on the remote control. Your TV enters the standby mode.

To turn the TV's main power off:

Press the Main power button on the TV. The POWER lamp goes off.

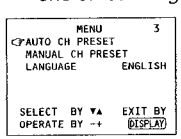
5. Selecting the on-screen language

You can select one of four languages for the on-screen display. The displayed menus on the screen are described in the selected language.
In this manual, on-screen descriptions are given in English. Select ENGLISH.

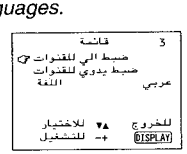


- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

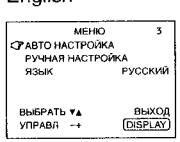
1. Repeatedly press MENU ▲/▼ to display the following menu.
The following menu is displayed in one of four languages.



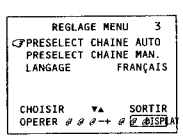
English



Arabic



Russian

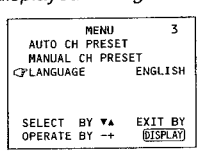


French

Note:
- If the menu appears in English, the TV's on-screen language is already set to English, so you can skip steps 2 and 3.

2. Press MENU ▲/▼ to select the third item on the menu 3.

3. Press MENU –/+ to select ENGLISH .
The menu is displayed in English.

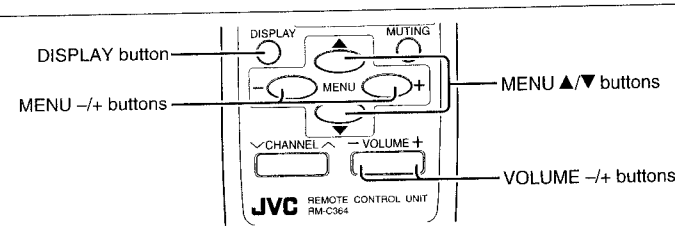


4. Proceed to "6. Presetting TV stations" on the following page.
- If you want to complete operations at this stage, press the DISPLAY button to turn the menu display off.

6. Presetting TV stations

To view a TV programme, you must first preset TV stations to channels on the TV.
This TV has 100 channels (channel 1 to 99 and channel AV).
You can choose between two functions, the Auto Channel Preset and Manual Channel Preset and preset TV stations to channels on TV.

Note:
- After you have finished presetting, you can set undesired channels to be skipped over, see "Skip" on page 12.



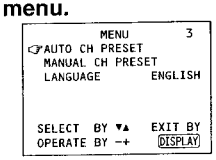
- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

■ Auto Channel Preset

You can automatically preset all TV stations that can be received on your TV to channels in one simple operation.

Notes:
- When you use this function, no station is preset to the channel AV. Channel AV is offered for viewing images from a VCR connected to your TV with only an aerial cable. For more details, see "To view images from a VCR connected to the TV with only an aerial cable" on page 15.
- If the Auto Channel Preset does not work well, preset TV stations manually. For details, see "Manual Channel Preset" on page 10.

1. Press MENU ▲/▼ to select AUTO CH PRESET in the "MENU 3" menu.



To display this menu:
Repeatedly press MENU ▲/▼ button until it is displayed.

2. Press MENU – /+ to start the Auto Channel Preset function.
">>> ON SEARCH" is displayed on the screen.

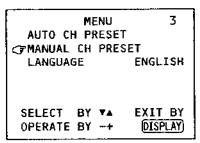
When you have finished presetting all TV channels that can be received on your TV, the display will go out and the Auto Channel Preset function will end.

- To stop the Auto Channel Preset, press the MENU –/+ button.

■ Manual Channel Preset

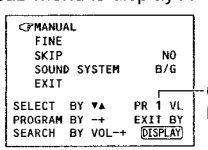
You can manually preset the desired TV stations to the desired channels.

1. Press MENU ▲/▼ to select MANUAL CH PRESET in the "MENU 3" menu.



To display this menu:
Repeatedly press the MENU ▲/▼ button until it is displayed.

2. Press MENU –/+.
The sub-menu is displayed.



- The channel No. is displayed as a PR No. For example, channel 1 will be displayed as PR 1. However, channel AV will be displayed as AV.

3. Press MENU –/+ to select the channel No. to be preset.

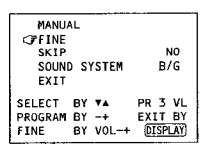
4. Press VOLUME –/+ to start selection of the TV station.
"＞＞＞" or "＜＜＜" is displayed on the screen.

When a TV station is received, the "＞＞＞" or "＜＜＜" display goes out, and the TV station is preset to the currently selected channel No.

- If you have selected the wrong TV station for preset, repeatedly press the VOLUME –/+ button until the desired TV station is selected.
- To stop the Manual Channel Preset, press any button other than the VOLUME –/+ button.

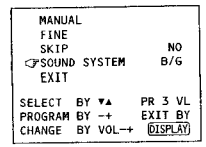
If the picture is not clear:
Use the Fine function to fine-tune the TV station.

1. Press MENU ▲/▼ to select FINE.



2. Hold VOLUME –/+ down to fine-tune the TV station so that the best image is displayed on screen.
"＞" or "＜" indicates that the TV station is being fine-tuned.

5. Press MENU ▲/▼ to select SOUND SYSTEM.



6. Press VOLUME –/+ to select the appropriate sound system.
- For the sound systems in each country or region, refer to the table "The Broadcasting systems of Each country or Region" below.

7. Press MENU ▲/▼ to select MANUAL.

8. Repeat steps 3 to 7 if you want to preset another TV station to a channel.

9. Press DISPLAY to turn the display off.

The Broadcasting Systems of Each Country or Region

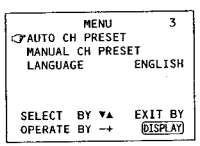
Area	Country or Region	System	
		Colour	Sound
Asia, Middle East	Bahrain, Kuwait, Oman, Qatar, United Arab Emirates, Yemen, etc. Indonesia, Malaysia, Singapore, Thailand, India, etc.	PAL	B/G
	China, Vietnam, etc.	PAL	D/K
	Hong Kong, etc.	PAL	I
	Islamic Republic of Iran, Lebanon, Saudi Arabia, etc.	SECAM	B/G
	Philippine, Taiwan, Myanmar, etc.	NTSC	M
Europe	Russia, etc.	SECAM	D/K
	Czech Republic, Poland, etc.	PAL	D/K
	Germany, Holland, Belgium, etc.	PAL	B/G
	UK, etc.	PAL	I
Oceania	Australia, New Zealand, etc.	PAL	B/G
Africa	Republic of South Africa, etc.	PAL	I
	Nigeria, etc.	PAL	B/G
	Egypt, Morocco, etc.	SECAM	B/G

■ Skip

When selecting channels, you can set undesired channels to be skipped. Channels set to be skipped cannot be selected by the CHANNEL V/Λ buttons nor the CHANNEL SCAN button.

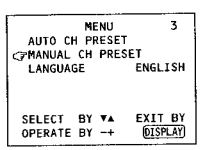
- Channels to which a station has not been preset are automatically set to be skipped.

1. Press MENU ▲/▼ to display the "MENU 3" menu.



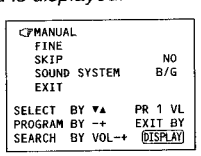
- If a different menu is displayed, repeatedly press the MENU ▲/▼ button until this menu is displayed.

2. Press MENU ▲/▼ to select MANUAL CH PRESET.

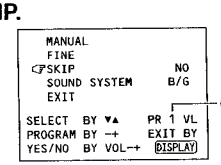


3. Press MENU –/+.

The sub-menu is displayed.



4. Press MENU ▲/▼ to select SKIP.



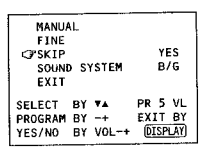
Channel No.

- The channel No. is displayed as a PR No. For example, channel 1 will be displayed as PR 1. However, channel AV will be displayed as AV.

5. Press MENU –/+ to select the channel you want to skip.

6. Press VOLUME –/+ to select YES.

The channel you selected is set to be skipped.



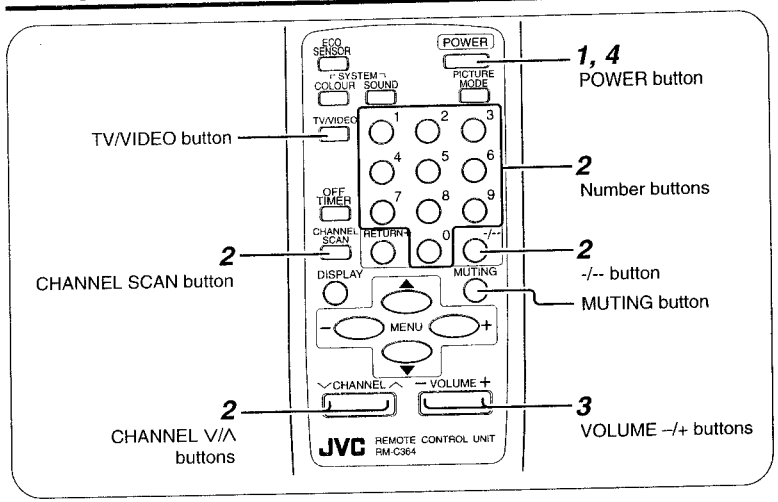
To cancel the Skip:
select NO.

7. Repeat steps 5 and 6 if you want to set another channel to skip.

8. Press DISPLAY to turn the display off.

Viewing a Television Programme

Using the remote control



1. Press POWER to turn your TV on.

Notes:

- If your TV does not turn on, press the Main power button on the TV then press the POWER button again.
- You can also turn on your TV by pressing any of the following buttons;
  – the CHANNEL V/Λ button
  – the Number buttons
  – the TV/VIDEO button

2. Select a channel.

■ Up/ down selection

1. Press CHANNEL V/Λ.

■ Direct selection

1. Repeatedly press the -/-- button to select the desired mode.

- : 1-digit mode
To select a channel with a 1-digit number.

- - : 2-digit mode
To select a channel with a 1-digit number or a 2-digit number.

2. Press the Number buttons to select a channel.

For 1-digit mode:
(example)
Channel 6 → Press 6.

For 2-digit mode:
(example)
Channel 6 → Press 0, 6.
Channel 16 → Press 1, 6.

- When you want to select channel AV, press 0 in 1-digit mode or 00 in 2-digit mode.

Viewing a Television Programme

■ Channel Scan selection

You can search for the channel you want to view while scanning all of the channels that can be viewed on this TV.

1. **Press CHANNEL SCAN.**
   Channels will be scanned in channel No. order.
2. **When the channel that you want to view appears, press CHANNEL SCAN again before scanning for the next channel begins.**

Note:

- Up/down and Channel Scan selections cannot be selected for channels to which the Skip has been set to YES. (See "Skip" on page 12.)

If the colour is abnormal:

Repeatedly press the COLOUR SYSTEM button to select the appropriate colour system. For details, see "Colour System" on page 16.

3. **Press VOLUME –/+ to adjust the sound.**

To temporarily render the sound inaudible:

Press the MUTING button.

- To return the sound, press the MUTING button again.

If the sound is abnormal:

Repeatedly press the SOUND SYSTEM button to select the appropriate sound system. For details, see "Sound System" on page 16.

4. **To turn your TV off, press POWER.**

Note:

- We recommend that you press the Main power button on the TV to turn the main power off if you do not plan to use your TV for a long time or if you wish to save energy.

Using the buttons on the TV

Condition:

- Check to make sure the Child Lock function is set to OFF. When the Child Lock function is set to ON, the TV cannot be operated using the front control buttons. For details, see "Child Lock" on page 21.

1. **Press CHANNEL V/Λ to turn your TV on.**

   Note:

   - If your TV does not turn on, press the Main power button and then press the CHANNEL V/Λ button again.

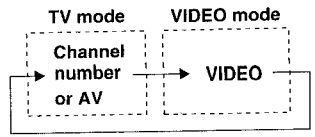
2. **Press CHANNEL V/Λ to select a channel.**
3. **Press VOLUME –/+ to adjust the sound.**
4. **To turn your TV off, press the Main power button to turn the main power off.**
   The POWER lamp goes off.

   - If you press the Main power button again, your TV turns on immediately. Step 1 is no longer required.

Viewing Images from an External Device

You can view images from VCRs or other external devices connected to your TV.

1. **Press TV/VIDEO to select the VIDEO mode.**



TV mode:

This mode is for viewing TV programmes. Press the TV/VIDEO button, or press the CHANNEL V/Λ buttons, or press the number buttons to return to this mode.

To view images from a VCR connected to the TV with only an aerial cable:

Your VCR must be preset to the channel AV of this TV.
Thoroughly read the manual of your VCR, and preset your VCR to the channel AV using the Manual Channel Preset function on page 10.
As a result, you can view images from your VCR when you select the channel AV in the TV mode.

If the colour is abnormal:

Repeatedly press the COLOUR SYSTEM button to select the appropriate colour system. For details, see "Colour System" on page 16.

To select the VIDEO mode using the buttons on the TV:

When not using the remote control, you can select the VIDEO mode using the MENU buttons on the TV.

1. **Repeatedly press the MENU button to select INPUT from "MENU 1" menu.**
2. **Press the MENU –/+ button on the TV.**
   TV mode changes to VIDEO mode.

Note:

- For details, see "Menu operations using the buttons on the TV" on page 23.

Sound and Picture

Colour System

If the colour is abnormal, select the appropriate colour system. Each press of the COLOUR SYSTEM button changes the colour system as follows.

In TV mode (channel 1 to 99 and AV):

<AV-A21M3/AV-F21M3/AV-K14M3>

AUTO → PAL → SECAM → NTSC4.43 ← NTSC3.58 ←

<AV-A21T3/AV-F21T3/AV-F21AU3/AV-K14T3>

AUTO → PAL → SECAM →

In VIDEO mode:

AUTO → PAL → SECAM → NTSC4.43 ← NTSC3.58 ←

AUTO:
Automatic colour system selection.

Notes:

- For the colour systems in each country or region, see the table "The Broadcasting Systems of Each Country or Region" on page 11.
- If the colour is abnormal even though you selected AUTO, change the appropriate colour system manually.

Sound System

If the sound is abnormal, select the appropriate sound system. Each press of the SOUND SYSTEM button changes the sound system as follows.

<AV-A21M3/AV-F21M3/AV-K14M3>

B/G → I → D/K → M →

<AV-A21T3/AV-F21T3/AV-F21AU3/AV-K14T3>

B/G → I → D/K →

Notes:

- For the sound systems in each country or region, see the table "The Broadcasting Systems of Each Country or Region" on page 11.
- You cannot select any sound system when in VIDEO mode.

Picture Mode

You can select one of three picture adjustment modes.
Repeatedly press the PICTURE MODE button to select the desired mode.

BRIGHT:
Heightens contrast and sharpness.

STANDARD:
Standardizes picture adjustments.

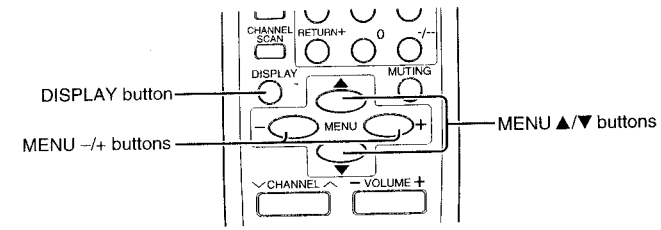
SOFT:
Softens contrast and sharpness.

Note:

- Pressing the PICTURE MODE button returns all the picture settings in the "MENU 4" menu to their default settings.

Picture Adjustment

You can adjust the picture as you like.

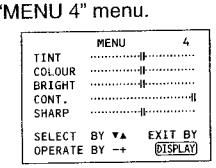


- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

1. Press MENU ▲/▼ to display a menu.

2. Press MENU ▲/▼ repeatedly to display the desired menu.

Display the "MENU 4" menu.



3. Press MENU ▲/▼ to select an item and press MENU –/+ to adjust it.

–	Item	+
Reddish	TINT (tint)	Greenish
Lighter	COLOUR (colour depth)	Deeper
Darker	BRIGHT (brightness)	Brighter
Lower	CONT. (contrast)	Higher
Softer	SHARP (sharpness)	Sharper

Note:

- TINT (tint) is displayed only when viewing images from NTSC3.58 or NTSC4.43 colour systems.

4. Press DISPLAY to turn the display off.

Other Features

Display

You can continuously display the current channel number or VIDEO mode on the screen.
Press the DISPLAY button.
To turn the display off, press the DISPLAY button again.

Note:

- When selecting a channel or VIDEO mode with no input signal, indication of selected channel or VIDEO mode becomes fixed on the screen.

Off Timer

You can set this TV to turn off automatically within a specified period of time.
Repeatedly press the OFF TIMER button to select the period of time.

- You can set the period of time a maximum of 120 minutes in 10 minute increments.
- 1 minute before the Off Timer turns off the TV, "GOOD NIGHT!" displays.

To display the remaining time:
Press the OFF TIMER button once.

To cancel the Off Timer:
Press the OFF TIMER button to return the period of time to 0.

Note:

- The Off Timer will not turn off the TV's main power.

Eco Sensor

(AV-A21M3/AV-A21T3/AV-F21M3/ AV-F21T3/AV-F21AU3)

You can adjust this TV so that the screen automatically adjusts to the optimum contrast according to the brightness of your room. This function reduces eye strain and the power consumption of this TV.
Repeatedly press the ECO SENSOR button to select the desired mode.

ECO SENSOR DISPLAY:
The Eco Sensor function will work. In this mode, the heart mark ♥ indicating the brightness of your room is displayed for several seconds each time the brightness changes. The number of heart marks displayed on screen increases as your room becomes darker. Up to six heart marks are displayed.

ECO SENSOR:
The Eco Sensor function will work. However, in this mode, the heart mark ♥ will not be displayed even if the brightness of your room changes.

ECO SENSOR OFF:
The Eco Sensor function will not work.

Return +

By setting a channel to "Return channel", you can return to that channel with one touch.

1. **Press CHANNEL V/Λ or the Number buttons to select a channel to set to "Return channel".**
2. **Press RETURN + for more than 3 seconds continuously.**
   "RETURN PLUS PROGRAMMED!" appears.
3. **When viewing another channel, press RETURN +.**
   The channel changes to the channel set for "Return channel".

To cancel the channel set for "Return channel":
Press the RETURN + button for more than 3 seconds continuously.
- "RETURN PLUS CANCELLED!" appears.

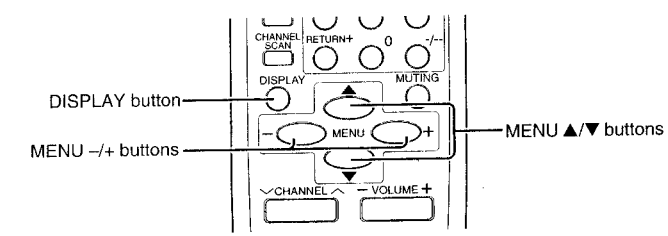
Notes:

- When you turn the TV off, the "Return channel" setting will be canceled.
- When you press the RETURN + button while viewing the channel set for "Return channel", the channel changes to the previously viewed channel.
- When you press the RETURN + button while in a VIDEO mode, the mode switches to TV mode. To return to the channel set for "Return channel", press the RETURN + button again.

When there is no setting for "Return channel":
When you press the RETURN + button, the channel changes to the previously viewed channel.

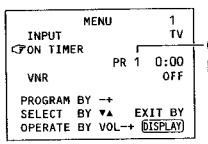
On Timer

Your TV will automatically turn on and tune into the channel you want after a certain period of time you have specified.



- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

1. Repeatedly press MENU ▲/▼ to display the "MENU 1" menu, and press MENU ▲/▼ to select ON TIMER.



2. Press MENU –/+ to select a channel you want to view when the TV turns on.

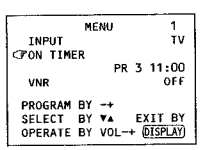
Note:

- You cannot select the channel AV, the VIDEO modes, and the channels for which the Skip is set (See "Skip" on page 12).

3. Press VOLUME –/+ to select the period of time after which you want to turn on the TV.

The ON TIMER lamp lights and the On Timer starts.

- Each time you press the button, the period of time changes in 15 minute intervals (up to 12 hours).



To cancel the On Timer:

Press the VOLUME –/+ button to return the period of time to "0:00".

4. Press DISPLAY to turn the display off.

5. Press POWER to turn the TV off.

The ON TIMER lamp will stay lit.

Notes:

- If you turn off the TV's main power by pressing the Main power button, the On Timer setting is canceled.
- If you do not turn off the TV after starting the On Timer, once the time set for the On Timer is reached, the channel will automatically switch to the channel set for the On Timer.

While the On Timer is operating:

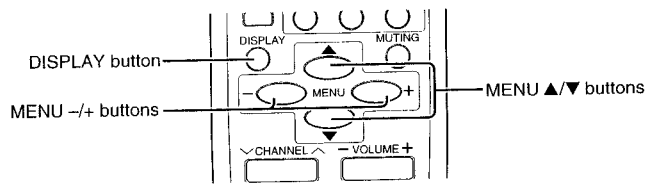
The ON TIMER lamp lights.

When the time set for the On Timer is reached:

The TV automatically turns on and the channel set for the On Timer is displayed.

Notes:

- For safety reasons the TV will automatically turn off if no operations are made within approximately two hours after the TV is turned on with the On Timer.
- The Off Timer and Auto Shutoff have priority over the On Timer.

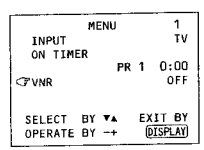


- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

VNR (Video Noise Reduction)

You can reduce the picture noise.

1. Repeatedly press MENU ▲/▼ to display the "MENU 1" menu, and press MENU ▲/▼ to select VNR.



2. Press MENU –/+ to select "ON" or "OFF."

ON:

Activates the VNR. Select "ON" when viewing a noisy picture.

OFF:

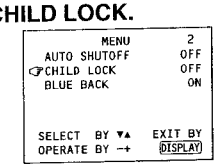
Cancels the VNR.

3. Press DISPLAY to turn the display off.

Child Lock

You can disable the front control buttons of the TV.
When this function is set to ON, the TV can be operated using only the remote control.
Use this function to prevent children from operating the TV at their own discretion (without parental consent).

1. Repeatedly press MENU ▲/▼ to display the "MENU 2" menu, and press MENU ▲/▼ to select CHILD LOCK.



2. Press MENU –/+ to select "ON" or "OFF."

ON:

Activates the Child Lock, disabling operation of the TV using the front control buttons.

OFF:

Cancels the Child Lock.

3. Press DISPLAY to turn the display off.

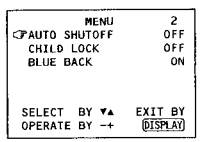
Note:

- The Child Lock is canceled when you turn the TV's main power off.

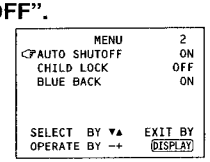
Auto Shutoff

You can set your TV to turn off if no signals are received for about 15 minutes or longer after the end of a broadcast.

1. Repeatedly press MENU ▲/▼ to display the "MENU 2" menu, and press MENU ▲/▼ to select AUTO SHUTOFF.



2. Press MENU –/+ to select "ON" or "OFF".



ON:
Activates the Auto Shutoff.
OFF:
Cancels the Auto Shutoff.

3. Press DISPLAY to turn the display off.

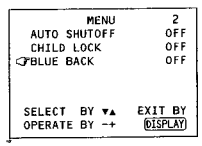
Notes:

- The Auto Shutoff function does not turn off the TV's main power.
- The Auto Shutoff will not work for a VIDEO mode.

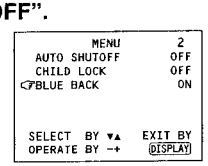
Blue Back

You can mute the sound and change the picture into a blue screen while no signals come into the TV, or when the input signals are unstable.

1. Repeatedly press MENU ▲/▼ to display the "MENU 2" menu, and press MENU ▲/▼ to select BLUE BACK.



2. Press MENU –/+ to select "ON" or "OFF".



ON:
Activates the Blue Back.
OFF:
Cancels the Blue Back.

Notes:

- To view a broadcast even when the reception signal is poor, set the Blue Back to OFF.
- Even when the Blue Back is set to OFF, the sound may not be audible.
- The Blue Back function does not operate in VIDEO mode.

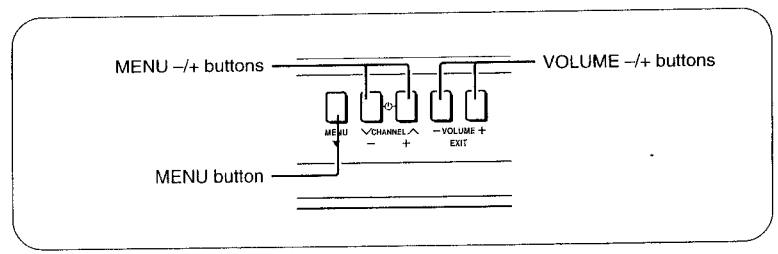
3. Press DISPLAY to turn the display off.

Menu operations using the buttons on the TV

You can operate functions in menus using the front control buttons on the TV without having to use the remote control.

Condition:

- Check to make sure the Child Lock function is set to OFF. When the Child Lock function is set to ON, the TV cannot be operated using the front control buttons. For details, see "Child Lock" on page 21.



1. Press MENU to display the menu.

If the desired menu is not displayed:
Repeatedly press the MENU button until the desired menu is displayed.

2. Repeatedly press MENU to select the desired function or item.

To select a function or item above the currently selected function or menu:
Repeatedly press the MENU button to proceed to another menu, and then repeatedly press the MENU button again to return to the original menu. Then select the function or item.

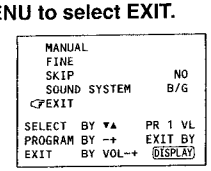
3. Press MENU –/+ or VOLUME –/+ to carry out the desired operation.

- For details, see the description for the respective function.

4. Press VOLUME –/+ to turn the menu display off.

If the sub-menu is displayed:
The sub-menu cannot be turned off by the VOLUME –/+ button when it is displayed. Follow the procedure below to turn the sub-menu display off.

1. **Press MENU to select EXIT.**



2. **Press VOLUME –/+ to turn the sub-menu display off.**

Troubleshooting

Important: Review all the instructions in this manual.

Problem	Check/Action
Cannot turn TV on.	Press the Main power button (see p.7). Insert the power plug in an AC outlet.
No picture nor sound.	Press the TV/VIDEO button to select the correct mode (see p.15). Check the aerial connections.
Remote control inoperable.	Replace the batteries (see p.7).
Buttons on front of TV do not work.	Is the Child Lock function ON? (see p.21).
The TV turns on suddenly.	The TV will automatically turn on when the On Timer is operated (see p.19).
The TV turns off suddenly.	The TV will automatically turn off in the following cases. • When the Off Timer or Auto Shutoff is operated (see p.18 and p.22). • When no operations are made within approximately two hours after the TV was turned on with the On Timer (see p.20).
Abnormal sound	Select the appropriate sound system (see p.16).
Abnormal colour	Adjust the colour and brightness (see p.17). Select the appropriate colour system (see p.16). Set the Picture mode to STANDARD (see p.16).
Lines or streaks in picture (interference)	Move the components apart until the interference disappears. Reposition the aerial.
Spotted picture (crosstalk)	Move the aerial away from the source of interference. Replace the aerial cable with a coaxial cable, which is less prone to interference.
Double picture (ghost)	Reposition the aerial. Replace with an aerial with good directionality.
Snowy picture (image noise)	Check the aerial connection and aim it correctly. Replace or repair the aerial.
The TV channel changes suddenly.	The channel will automatically be changed when the On Timer operates (see p.20).
The screen turns blue.	Is the Blue Back set to ON? (see p.22).

The following are normal occurrences and are not the result of TV malfunctions:

- When you touch the CRT surface, you might feel a slight charge of static electricity. This is because the CRT contains static electricity; it does not affect the human body.
- Your TV may emit a crackling sound due to a sudden change in temperature. There is no problem unless the picture or sound is abnormal.
- When a still bright image (of a white dress, for example) appears on the screen, the image may be coloured. This problem occurs in all CRTs, and when the bright image disappears, the colouration also disappears.
- This TV is equipped with a microcomputer that may operate abnormally due to interference from external devices. If this happens, press the Main power button to turn the main power off and disconnect the power plug from the AC outlet. Then, reconnect the power plug to the AC outlet and press the Main power button again.

Specifications

Model	AV-A21M3	AV-A21T3
TV RF systems	B, G, I, D, K, K1, M	B, G, I, D, K, K1
Colour systems	PAL, SECAM, NTSC 3.58 / 4.43 MHz	PAL, SECAM, NTSC 3.58 / 4.43 MHz (in VIDEO mode only)
Channel and frequencies	VHF low channel (VL) = 46.25 to 168.25 MHz VHF high channel (VH) = 175.25 to 463.25 MHz UHF channel (U) = 471.25 to 863.25 MHz ■ Receives cable channels in mid band (X to Z, S1 to S10), super band (S11 to S20) and hyper band (S21 to S41) .	
Power input	AC110 to 240 V, 50 / 60 Hz	
Power consumption	Maximum 100 W, Average 67 W	
Screen size (measured diagonally)	Picture tube 55 cm Visible area 51 cm	
Audio output (Rated power output)	5W (monaural)	
Speakers	(5 cm × 9 cm) oval × 2	
External input / output	VIDEO input (RCA) AUDIO input (RCA)	
	VIDEO output (RCA) AUDIO output (RCA)	
	Headphone jack: mini jack (dia. 3.5 mm)	
Dimensions (W × H × D)	502 mm × 451 mm × 481 mm	
Weight	19.5 kg	
Accessories	• Remote control unit: RM-C364 × 1 • AA / R6 / UM-3 dry cell battery × 2	

Design and specifications subject to change without notice.

Specifications

Model	AV-F21M3	AV-F21T3	AV-F21AU3
TV RF systems	B, G, I, D, K, K1, M	B, G, I, D, K, K1	
Colour systems	PAL, SECAM, NTSC 3.58 / 4.43 MHz	PAL, SECAM, NTSC 3.58 / 4.43 MHz (in VIDEO mode only)	
Channel and frequencies	VHF low channel (VL) = 46.25 to 168.25 MHz VHF high channel (VH) = 175.25 to 463.25 MHz UHF channel (U) = 471.25 to 863.25 MHz ■ Receives cable channels in mid band (X to Z, S1 to S10), super band (S11 to S20) and hyper band (S21 to S41) .		
Power input	AC110 to 240 V, 50 / 60 Hz		
Power consumption	Maximum 100 W, Average 67 W		
Screen size (measured diagonally)	Picture tube 55 cm Visible area 51 cm		
Audio output (Rated power output)	5W (monaural)		
Speakers	(6 cm × 12 cm) oval × 2		
External input / output	VIDEO input (RCA) AUDIO input (RCA)		
	VIDEO output (RCA) AUDIO output (RCA)		
	Headphone jack: mini jack (dia. 3.5 mm)		
Dimensions (W × H × D)	619 mm × 458 mm × 486.5 mm		
Weight	22 kg		
Accessories	• Remote control unit: RM-C364 × 1 • AA / R6 / UM-3 dry cell battery × 2		

Design and specifications subject to change without notice.

Specifications

Model	AV-K14M3	AV-K14T3
TV RF systems	B, G, I, D, K, K1, M	B, G, I, D, K, K1
Colour systems	PAL, SECAM, NTSC 3.58 / 4.43 MHz	PAL, SECAM, NTSC 3.58 / 4.43 MHz (in VIDEO mode only)
Channel and frequencies	VHF low channel (VL) = 46.25 to 168.25 MHz VHF high channel (VH) = 175.25 to 463.25 MHz UHF channel (U) = 471.25 to 863.25 MHz ■ Receives cable channels in mid band (X to Z, S1 to S10), super band (S11 to S20) and hyper band (S21 to S41) .	
Power input	AC110 to 240 V, 50 / 60 Hz	
Power consumption	Maximum 70 W, Average 47 W	
Screen size (measured diagonally)	Picture tube 36 cm Visible area 34 cm	
Audio output (Rated power output)	3W (monaural)	
Speakers	(5 cm × 9 cm) oval × 2	
External input / output	VIDEO input (RCA) AUDIO input (RCA)	
	VIDEO output (RCA) AUDIO output (RCA)	
	Headphone jack: mini jack (dia. 3.5 mm)	
Dimensions (W × H × D)	462 mm × 341 mm × 375 mm	
Weight	9.9 kg	
Accessories	• Remote control unit: RM-C360 × 1 • AA / R6 / UM-3 dry cell battery × 2 • Rod aerial × 1	

Design and specifications subject to change without notice.

JVC

COLOUR TELEVISION

AV-2113EE
AV-2133EE
AV-1433EE

INSTRUCTIONS

Thank you for purchasing this JVC colour television.
To ensure your complete understanding, please read this manual thoroughly before operation.

Contents

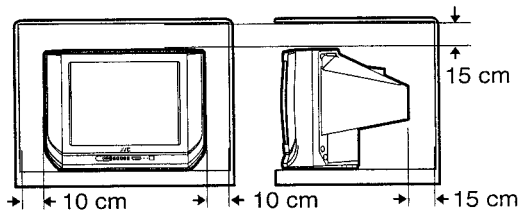
Locations 2
Preparation 4
Viewing a Television Programme 13
Viewing Images from an External Device 15
Sound and Picture 16
Other Features 18
Troubleshooting 24
Specifications 25

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

- TO ENSURE PERSONAL SAFETY, OBSERVE THE FOLLOWING RULES REGARDING THE USE OF THIS TV.
- Operate only from the power source specified on the TV.
- Avoid damaging the power plug and power cord.
- Avoid improper installation and never position this TV where good ventilation is unattainable. When installing this TV distance recommendations must be maintained between the floor and wall, as well as installment in a tightly enclosed area or piece of furniture. Adhere to the minimum distance guidelines shown for safe operation.



- Do not allow objects or liquid into the cabinet openings.
- In the event of a fault, unplug this TV and call a service technician. Do not attempt to repair it by yourself or remove the rear cover.
- When you don't use this TV for a long period of time, be sure to disconnect the power plug from the AC outlet.

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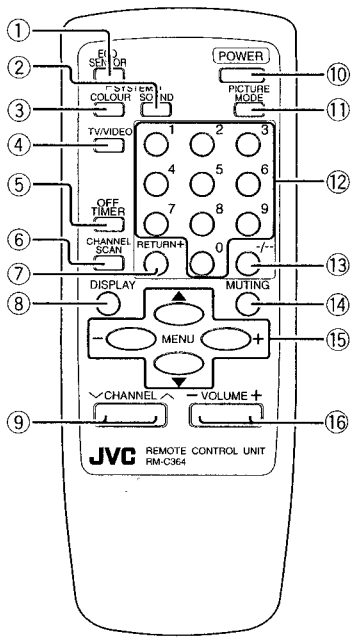
LCT0442-001A-H
0999-Ki-AB-NV-JMT

Locations

Locations of remote control buttons



① ECO SENSOR button (AV-2113EE, AV-2133EE)	p.18
② SOUND SYSTEM button	p.16
③ COLOUR SYSTEM button	p.16
④ TV/VIDEO button	p.15
⑤ OFF TIMER button	p.18
⑥ CHANNEL SCAN button	p.14
⑦ RETURN + button	p.19
⑧ DISPLAY button	p.18
⑨ CHANNEL V/Λ buttons	p.13
⑩ POWER button	p.7,13,14
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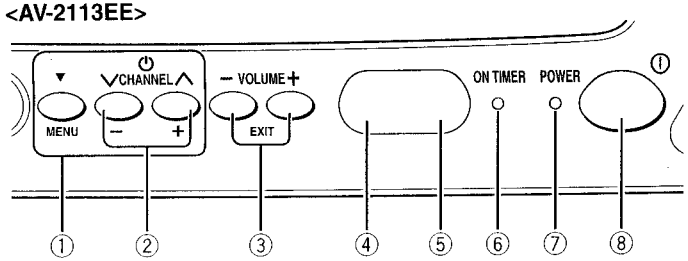
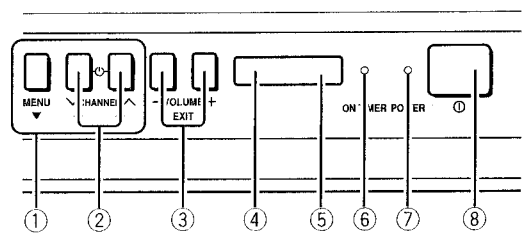
⑫ Number buttons	p.13
⑬ -/-- button	p.13
⑭ MUTING button	p.14
⑮ MENU buttons • MENU ▲/▼ buttons • MENU –/+ buttons	
⑯ VOLUME –/+ buttons	p.14

Locations of front panel buttons and lamps

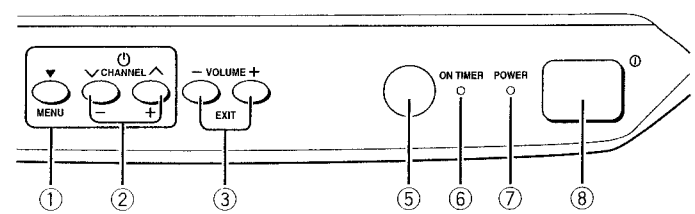
<AV-2113EE>



<AV-2133EE>



<AV-1433EE>



① MENU buttons • MENU button • MENU –/+ buttons	p.23
② CHANNEL V/Λ buttons	p.14
③ VOLUME –/+ buttons	p.14
④ ECO sensor	
⑤ Remote control sensor	
⑥ ON TIMER lamp	p.20
⑦ POWER lamp	p.7,14
⑧ Main power button	p.7,14

Preparation

1. Connecting the aerial and external devices

Notes:

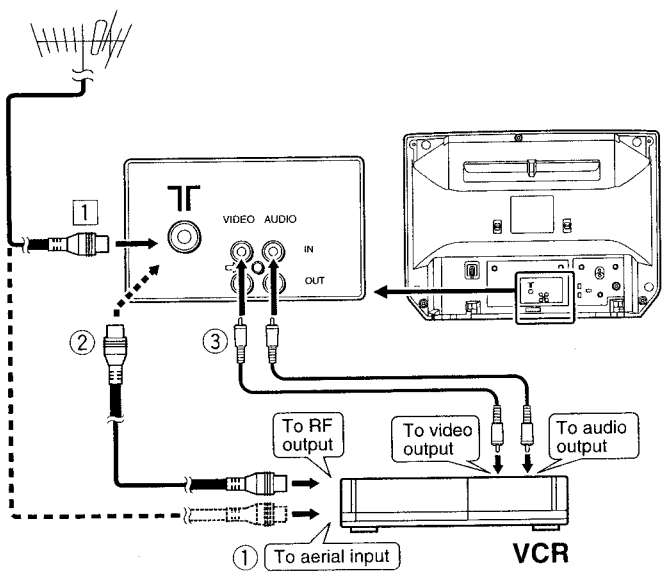
- For further details, refer to the manuals provided with the devices you are connecting.
- Connecting cables are not supplied.
- The front and rear AUDIO/VIDEO input jacks are directly connected so that input to either jack is output through both. You cannot provide input to both the front and rear jacks at the same time. Disconnect one input, or use one of the jacks as an output jack only (for monitoring or recording).

■ Connecting the aerial and VCR

If not connecting a VCR (video cassette recorder), do 1.
If connecting a VCR, proceed ① → ② → ③.

- You can view images from the VCR without doing ③. For details, see "To view images from a VCR connected to the TV with only an aerial cable" on page 15.

VHF/UHF outdoor aerial



Note:

- The rod aerial is supplied with the AV-1433EE.

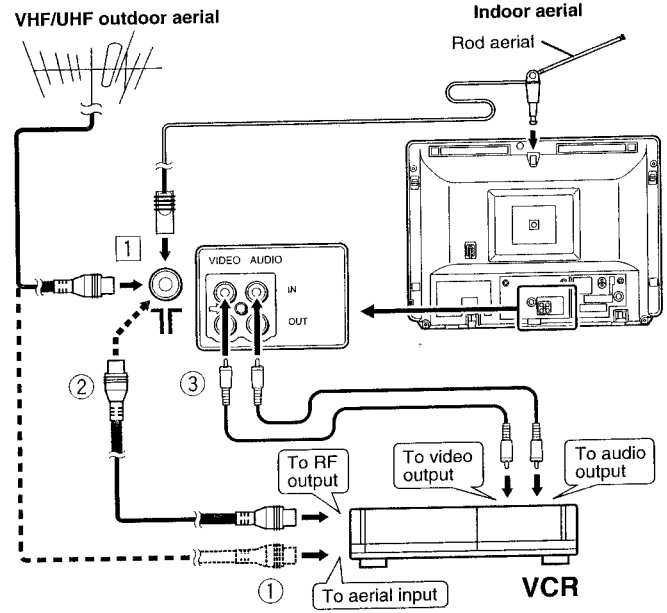
If not connecting a VCR (video cassette recorder), do 1.
If connecting a VCR, proceed ① → ② → ③.

- You can view images from the VCR without doing ③. For details, see "To view images from a VCR connected to the TV with only an aerial cable" on page 15.

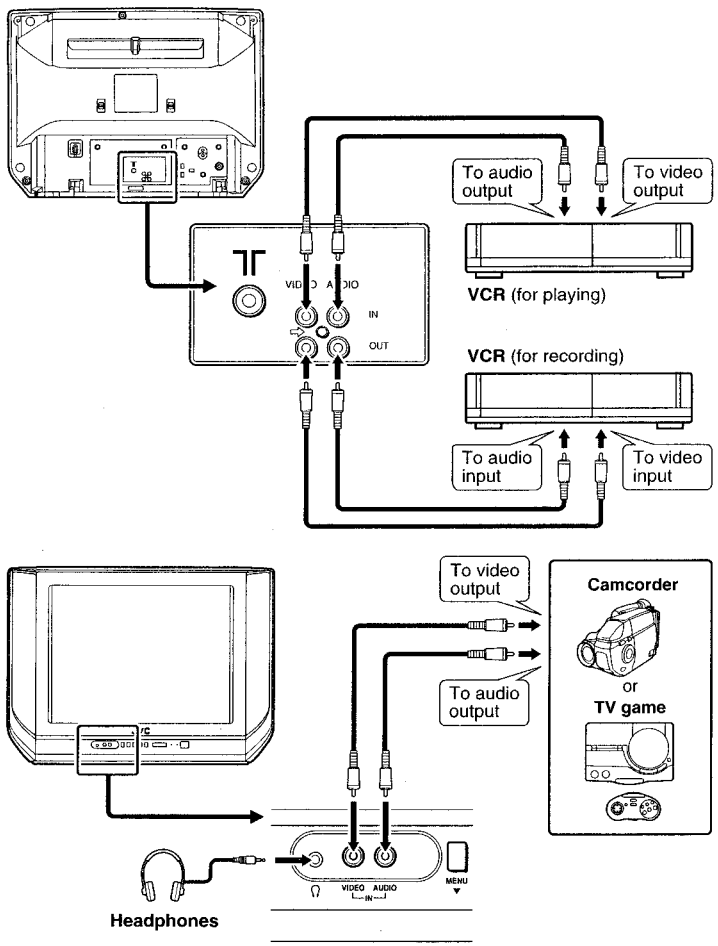
To install rod aerial:
Install into the top-rear aerial holder. Once installed, it cannot be removed.

<AV-1433EE>

VHF/UHF outdoor aerial **Indoor aerial**



■ Connecting other external devices



Note:

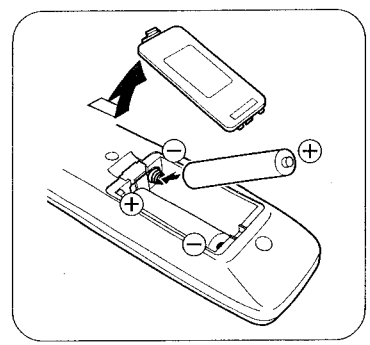
- Use headphones with a mini jack (dia. 3.5 mm). When using headphones, the speaker sound output is disabled.

2. Connecting the power cord

Insert the Power plug into an AC outlet.

3. Inserting batteries into the remote control

Correctly insert two batteries, observing the ⊕ and ⊖ polarities and inserting the ⊖ end first.



CAUTION:

- Follow the cautions printed on the batteries.

Notes:

- Use AA/R6/UM-3 dry cell batteries.
- Battery life is approximately six months to one year depending on frequency of use.
- If the remote control operates erratically, replace the batteries.
- We recommend that you use the supplied batteries initially and replace them as soon as operation becomes erratic. The supplied batteries are for testing, not regular use.

4. Turning your TV on

1. Press the Main power button on the TV to turn the TV's main power on.

The POWER lamp lights red.

If image does not appear:

Your TV is in the standby mode. Press the POWER button on the remote control to turn your TV on.

- You can also turn on your TV by pressing the CHANNEL ∨/∧ button on your TV.

To turn your TV off:

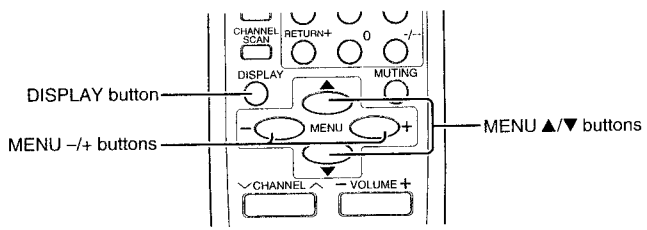
Press the POWER button on the remote control. Your TV enters the standby mode.

To turn the TV's main power off:

Press the Main power button on the TV. The POWER lamp goes off.

5. Selecting the on-screen language

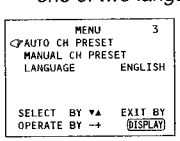
You can select one of two languages for the on-screen display. The displayed menus on the screen are described in the selected language.
In this manual, on-screen descriptions are given in English. Select ENGLISH.



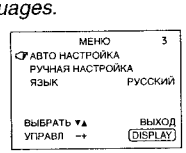
- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

1. Repeatedly press MENU ▲/▼ to display the following menu.

The following menu is displayed in one of two languages.



English



Russian

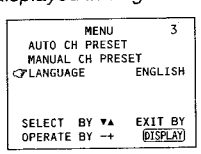
Note:

- If the menu appears in English, the TV's on-screen language is already set to English, so you can skip steps 2 and 3.

2. Press MENU ▲/▼ to select the third item on the menu 3.

3. Press MENU –/+ to select ENGLISH .

The menu is displayed in English.



4. Proceed to "6. Presetting TV stations" on the following page.

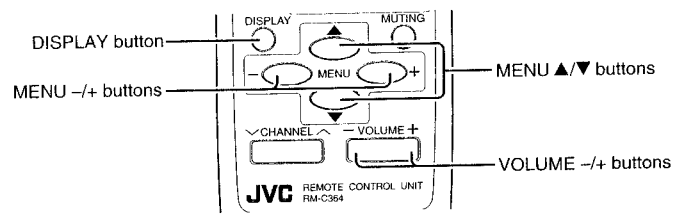
- If you want to complete operations at this stage, press the DISPLAY button to turn the menu display off.

6. Presetting TV stations

To view a TV programme, you must first preset TV stations to channels on the TV. This TV has 100 channels (channel 1 to 99 and channel AV).
You can choose between two functions, the Auto Channel Preset and Manual Channel Preset and preset TV stations to channels on TV.

Note:

- After you have finished presetting, you can set undesired channels to be skipped over, see "Skip" on page 12.



- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

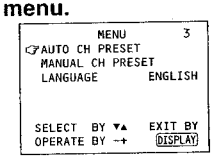
■ Auto Channel Preset

You can automatically preset all TV stations that can be received on your TV to channels in one simple operation.

Notes:

- When you use this function, no station is preset to the channel AV. Channel AV is offered for viewing images from a VCR connected to your TV with only an aerial cable. For more details, see "To view images from a VCR connected to the TV with only an aerial cable" on page 15.
- If the Auto Channel Preset does not work well, preset TV stations manually. For details, see "Manual Channel Preset" on page 10.

1. Press MENU ▲/▼ to select AUTO CH PRESET in the "MENU 3" menu.



To display this menu:
Repeatedly press MENU ▲/▼ button until it is displayed.

2. Press MENU – /+ to start the Auto Channel Preset function.

">>> ON SEARCH" is displayed on the screen.

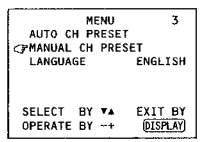
When you have finished presetting all TV channels that can be received on your TV, the display will go out and the Auto Channel Preset function will end.

- To stop the Auto Channel Preset, press the MENU –/+ button.

■ Manual Channel Preset

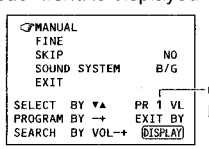
You can manually preset the desired TV stations to the desired channels.

1. Press MENU ▲/▼ to select MANUAL CH PRESET in the "MENU 3" menu.



To display this menu:
Repeatedly press the MENU ▲/▼ button until it is displayed.

2. Press MENU –/+.
The sub-menu is displayed.



- The channel No. is displayed as a PR No. For example, channel 1 will be displayed as PR 1. However, channel AV will be displayed as AV.

3. Press MENU –/+ to select the channel No. to be preset.

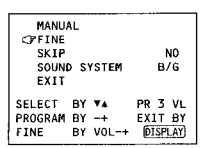
4. Press VOLUME –/+ to start selection of the TV station.
">>>" or "<<<" is displayed on the screen.

When a TV station is received, the ">>>" or "<<<" display goes out, and the TV station is preset to the currently selected channel No.

- If you have selected the wrong TV station for preset, repeatedly press the VOLUME –/+ button until the desired TV station is selected.
- To stop the Manual Channel Preset, press any button other than the VOLUME –/+ button.

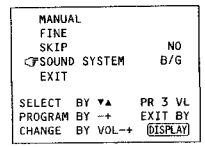
If the picture is not clear:
Use the Fine function to fine-tune the TV station.

1. Press MENU ▲/▼ to select FINE.



2. Hold VOLUME –/+ down to fine-tune the TV station so that the best image is displayed on screen.
">" or "<" indicates that the TV station is being fine-tuned.

5. Press MENU ▲/▼ to select SOUND SYSTEM.



6. Press VOLUME –/+ to select the appropriate sound system.
- For the sound systems in each country or region, refer to the table "The Broadcasting systems of Each country or Region" below.

7. Press MENU ▲/▼ to select MANUAL.

8. Repeat steps 3 to 7 if you want to preset another TV station to a channel.

9. Press DISPLAY to turn the display off.

The Broadcasting Systems of Each Country or Region

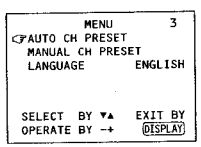
Area	Country or Region	System	
		Colour	Sound
Asia, Middle East	Bahrain, Kuwait, Oman, Qatar, United Arab Emirates, Yemen, etc. Indonesia, Malaysia, Singapore, Thailand, India, etc.	PAL	B/G
	China, Vietnam, etc.	PAL	D/K
	Hong Kong, etc.	PAL	I
	Islamic Republic of Iran, Lebanon, Saudi Arabia, etc.	SECAM	B/G
Europe	Russia, etc.	SECAM	D/K
	Czech Republic, Poland, etc.	PAL	D/K
	Germany, Holland, Belgium, etc.	PAL	B/G
	UK, etc.	PAL	I
Oceania	Australia, New Zealand, etc.	PAL	B/G
Africa	Republic of South Africa, etc.	PAL	I
	Nigeria, etc.	PAL	B/G
	Egypt, Morocco, etc.	SECAM	B/G

■ Skip

When selecting channels, you can set undesired channels to be skipped. Channels set to be skipped cannot be selected by the CHANNEL V/Λ buttons nor the CHANNEL SCAN button.

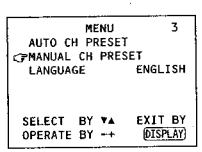
- Channels to which a station has not been preset are automatically set to be skipped.

1. Press MENU ▲/▼ to display the "MENU 3" menu.



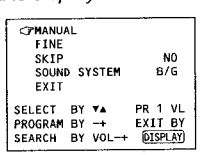
- If a different menu is displayed, repeatedly press the MENU ▲/▼ button until this menu is displayed.

2. Press MENU ▲/▼ to select MANUAL CH PRESET.

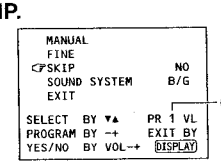


3. Press MENU –/+.

The sub-menu is displayed.



4. Press MENU ▲/▼ to select SKIP.



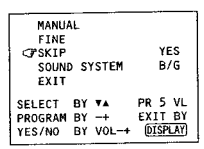
Channel No.

- The channel No. is displayed as a PR No. For example, channel 1 will be displayed as PR 1. However, channel AV will be displayed as AV.

5. Press MENU –/+ to select the channel you want to skip.

6. Press VOLUME –/+ to select YES.

The channel you selected is set to be skipped.



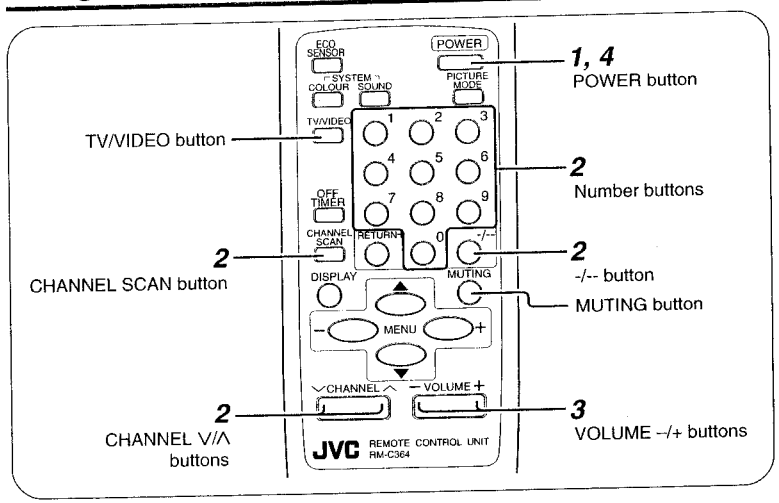
To cancel the Skip:
select NO.

7. Repeat steps 5 and 6 if you want to set another channel to skip.

8. Press DISPLAY to turn the display off.

Viewing a Television Programme

Using the remote control



1. Press POWER to turn your TV on.

Notes:

- If your TV does not turn on, press the Main power button on the TV then press the POWER button again.
- You can also turn on your TV by pressing any of the following buttons;
  – the CHANNEL V/Λ button
  – the Number buttons
  – the TV/VIDEO button

2. Select a channel.

■ Up/ down selection

1. Press CHANNEL V/Λ.

■ Direct selection

1. Repeatedly press the -/-- button to select the desired mode.

- : 1-digit mode
To select a channel with a 1-digit number.

- - : 2-digit mode
To select a channel with a 1-digit number or a 2-digit number.

2. Press the Number buttons to select a channel.

For 1-digit mode:
(example)
Channel 6 → Press 6.

For 2-digit mode:
(example)
Channel 6 → Press 0, 6.
Channel 16 → Press 1, 6.

- When you want to select channel AV, press 0 in 1-digit mode or 00 in 2-digit mode.

Viewing a Television Programme

■ Channel Scan selection

You can search for the channel you want to view while scanning all of the channels that can be viewed on this TV.

1. **Press CHANNEL SCAN.**
   Channels will be scanned in channel No. order.
2. **When the channel that you want to view appears, press CHANNEL SCAN again before scanning for the next channel begins.**

Note:

- Up/down and Channel Scan selections cannot be selected for channels to which the Skip has been set to YES. (See "Skip" on page 12.)

If the colour is abnormal:

Repeatedly press the COLOUR SYSTEM button to select the appropriate colour system. For details, see "Colour System" on page 16.

3. **Press VOLUME –/+ to adjust the sound.**

To temporarily render the sound inaudible:

Press the MUTING button.

- To return the sound, press the MUTING button again.

If the sound is abnormal:

Repeatedly press the SOUND SYSTEM button to select the appropriate sound system. For details, see "Sound System" on page 16.

4. **To turn your TV off, press POWER.**

Note:

- We recommend that you press the Main power button on the TV to turn the main power off if you do not plan to use your TV for a long time or if you wish to save energy.

Using the buttons on the TV

Condition:

- Check to make sure the Child Lock function is set to OFF. When the Child Lock function is set to ON, the TV cannot be operated using the front control buttons. For details, see "Child Lock" on page 21.

1. **Press CHANNEL ∨/∧ to turn your TV on.**

Note:

- If your TV does not turn on, press the Main power button and then press the CHANNEL ∨/∧ button again.

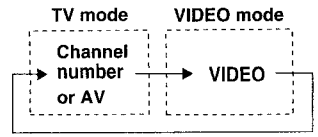
2. **Press CHANNEL ∨/∧ to select a channel.**
3. **Press VOLUME –/+ to adjust the sound.**
4. **To turn your TV off, press the Main power button to turn the main power off.**
   The POWER lamp goes off.

- If you press the Main power button again, your TV turns on immediately. Step 1 is no longer required.

Viewing Images from an External Device

You can view images from VCRs or other external devices connected to your TV.

1. **Press TV/VIDEO to select the VIDEO mode.**



TV mode:

This mode is for viewing TV programmes. Press the TV/VIDEO button, or press the CHANNEL ∨/∧ buttons, or press the number buttons to return to this mode.

To view images from a VCR connected to the TV with only an aerial cable:

Your VCR must be preset to the channel AV of this TV.
Thoroughly read the manual of your VCR, and preset your VCR to the channel AV using the Manual Channel Preset function on page 10.
As a result, you can view images from your VCR when you select the channel AV in the TV mode.

If the colour is abnormal:

Repeatedly press the COLOUR SYSTEM button to select the appropriate colour system. For details, see "Colour System" on page 16.

To select the VIDEO mode using the buttons on the TV:

When not using the remote control, you can select the VIDEO mode using the MENU buttons on the TV.

1. **Repeatedly press the MENU button to select INPUT from "MENU 1" menu.**
2. **Press the MENU –/+ button on the TV.**
   TV mode changes to VIDEO mode.

Note:

- For details, see "Menu operations using the buttons on the TV" on page 23.

Sound and Picture

Colour System

If the colour is abnormal, select the appropriate colour system. Each press of the COLOUR SYSTEM button changes the colour system as follows.

In TV mode (channel 1 to 99 and AV):

AUTO → PAL → SECAM →

In VIDEO mode:

AUTO → PAL → SECAM → NTSC4.43 ← NTSC3.58 ←

AUTO:
Automatic colour system selection.

Notes:

- For the colour systems in each country or region, see the table "The Broadcasting Systems of Each Country or Region" on page 11.
- If the colour is abnormal even though you selected AUTO, change the appropriate colour system manually.

Sound System

If the sound is abnormal, select the appropriate sound system. Each press of the SOUND SYSTEM button changes the sound system as follows.

B/G → I → D/K →

Notes:

- For the sound systems in each country or region, see the table "The Broadcasting Systems of Each Country or Region" on page 11.
- You cannot select any sound system when in VIDEO mode.

Picture Mode

You can select one of three picture adjustment modes.
Repeatedly press the PICTURE MODE button to select the desired mode.

BRIGHT:
Heightens contrast and sharpness.

STANDARD:
Standardizes picture adjustments.

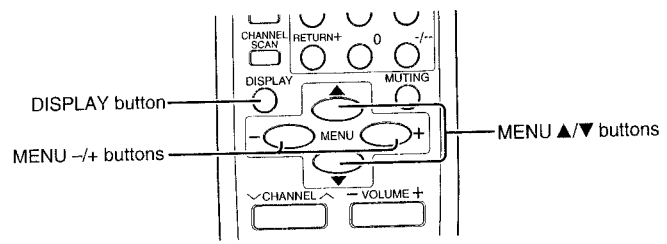
SOFT:
Softens contrast and sharpness.

Note:

- Pressing the PICTURE MODE button returns all the picture settings in the "MENU 4" menu to their default settings.

Picture Adjustment

You can adjust the picture as you like.

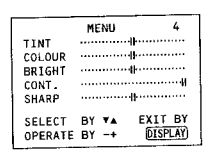


- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

1. Press MENU ▲/▼ to display a menu.

2. Press MENU ▲/▼ repeatedly to display the desired menu.

Display the "MENU 4" menu.



3. Press MENU ▲/▼ to select an item and press MENU –/+ to adjust it.

–	Item	+
Reddish	TINT (tint)	Greenish
Lighter	COLOUR (colour depth)	Deeper
Darker	BRIGHT (brightness)	Brighter
Lower	CONT. (contrast)	Higher
Softer	SHARP (sharpness)	Sharper

Note:

- TINT (tint) is displayed only when viewing images from NTSC3.58 or NTSC4.43 colour systems.

4. Press DISPLAY to turn the display off.

Other Features

Display

You can continuously display the current channel number or VIDEO mode on the screen.
Press the DISPLAY button.
To turn the display off, press the DISPLAY button again.

Note:

- When selecting a channel or VIDEO mode with no input signal, indication of selected channel or VIDEO mode becomes fixed on the screen.

Off Timer

You can set this TV to turn off automatically within a specified period of time.
Repeatedly press the OFF TIMER button to select the period of time.

- You can set the period of time a maximum of 120 minutes in 10 minute increments.
- 1 minute before the Off Timer turns off the TV, "GOOD NIGHT!" is displayed.

To display the remaining time:
Press the OFF TIMER button once.

To cancel the Off Timer:
Press the OFF TIMER button to return the period of time to 0.

Note:

- The Off Timer will not turn off the TV's main power.

Eco Sensor
(AV-2113EE, AV-2133EE)

You can adjust this TV so that the screen automatically adjusts to the optimum contrast according to the brightness of your room. This function reduces eye strain and the power consumption of this TV.
Repeatedly press the ECO SENSOR button to select the desired mode.

ECO SENSOR DISPLAY:
The Eco Sensor function will work. In this mode, the heart mark ♥ indicating the brightness of your room is displayed for several seconds each time the brightness changes. The number of heart marks displayed on screen increases as your room becomes darker. Up to six heart marks are displayed.

ECO SENSOR:
The Eco Sensor function will work. However, in this mode, the heart mark ♥ will not be displayed even if the brightness of your room changes.

ECO SENSOR OFF:
The Eco Sensor function will not work.

Return +

By setting a channel to "Return channel", you can return to that channel with one touch.

1. **Press CHANNEL V/Λ or the Number buttons to select a channel to set to "Return channel".**
2. **Press RETURN + for more than 3 seconds continuously.**
   "RETURN PLUS PROGRAMMED!" appears.
3. **When viewing another channel, press RETURN +.**
   The channel changes to the channel set for "Return channel".

To cancel the channel set for "Return channel":
Press the RETURN + button for more than 3 seconds continuously.
- "RETURN PLUS CANCELLED!" appears.

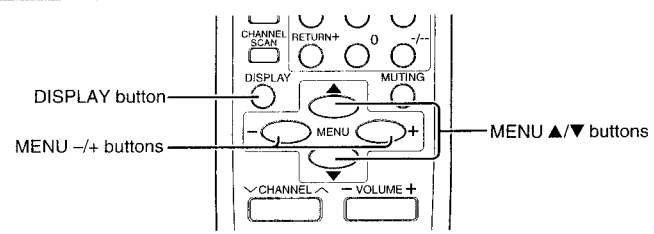
Notes:

- When you turn the TV off, the "Return channel" setting will be canceled.
- When you press the RETURN + button while viewing the channel set for "Return channel", the channel changes to the previously viewed channel.
- When you press the RETURN + button while in a VIDEO mode, the mode switches to TV mode. To return to the channel set for "Return channel", press the RETURN + button again.

When there is no setting for "Return channel":
When you press the RETURN + button, the channel changes to the previously viewed channel.

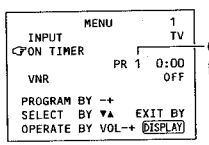
On Timer

Your TV will automatically turn on and tune into the channel you want after a certain period of time you have specified.



- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

1. Repeatedly press MENU ▲/▼ to display the "MENU 1" menu, and press MENU ▲/▼ to select ON TIMER.



2. Press MENU –/+ to select a channel you want to view when the TV turns on.

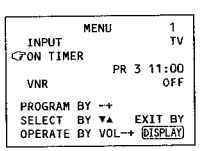
Note:

- You cannot select the channel AV, the VIDEO modes, and the channels for which the Skip is set (See "Skip" on page 12).

3. Press VOLUME –/+ to select the period of time after which you want to turn on the TV.

The ON TIMER lamp lights and the On Timer starts.

- Each time you press the button, the period of time changes in 15 minute intervals (up to 12 hours).



To cancel the On Timer:

Press the VOLUME –/+ button to return the period of time to "0:00".

4. Press DISPLAY to turn the display off.

5. Press POWER to turn the TV off.

The ON TIMER lamp will stay lit.

Notes:

- If you turn off the TV's main power by pressing the Main power button, the On Timer setting is canceled.
- If you do not turn off the TV after starting the On Timer, once the time set for the On Timer is reached, the channel will automatically switch to the channel set for the On Timer.

While the On Timer is operating:

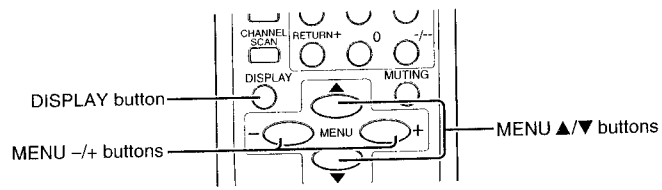
The ON TIMER lamp lights.

When the time set for the On Timer is reached:

The TV automatically turns on and the channel set for the On Timer is displayed.

Notes:

- For safety reasons the TV will automatically turn off if no operations are made within approximately two hours after the TV is turned on with the On Timer.
- The Off Timer and Auto Shutoff have priority over the On Timer.

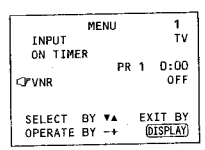


- For details on menu operations using the front control buttons on the TV, see "Menu operations using the buttons on the TV" on page 23.

VNR (Video Noise Reduction)

You can reduce the picture noise.

1. Repeatedly press MENU ▲/▼ to display the "MENU 1" menu, and press MENU ▲/▼ to select VNR.



2. Press MENU –/+ to select "ON" or "OFF."

ON:

Activates the VNR. Select "ON" when viewing a noisy picture.

OFF:

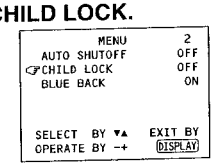
Cancels the VNR.

3. Press DISPLAY to turn the display off.

Child Lock

You can disable the front control buttons of the TV.
When this function is set to ON, the TV can be operated using only the remote control.
Use this function to prevent children from operating the TV at their own discretion (without parental consent).

1. Repeatedly press MENU ▲/▼ to display the "MENU 2" menu, and press MENU ▲/▼ to select CHILD LOCK.



2. Press MENU –/+ to select "ON" or "OFF."

ON:

Activates the Child Lock, disabling operation of the TV using the front control buttons.

OFF:

Cancels the Child Lock.

3. Press DISPLAY to turn the display off.

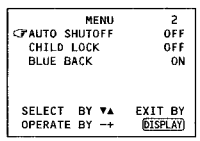
Note:

- The Child Lock is canceled when you turn the TV's main power off.

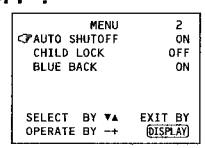
Auto Shutoff

You can set your TV to turn off if no signals are received for about 15 minutes or longer after the end of a broadcast.

1. Repeatedly press MENU ▲/▼ to display the "MENU 2" menu, and press MENU ▲/▼ to select AUTO SHUTOFF.



2. Press MENU –/+ to select "ON" or "OFF".



ON:
Activates the Auto Shutoff.
OFF:
Cancels the Auto Shutoff.

3. Press DISPLAY to turn the display off.

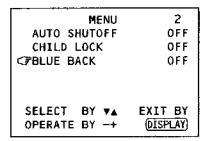
Notes:

- The Auto Shutoff function does not turn off the TV's main power.
- The Auto Shutoff will not work for a VIDEO mode.

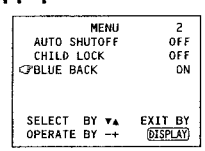
Blue Back

You can mute the sound and change the picture into a blue screen while no signals come into the TV, or when the input signals are unstable.

1. Repeatedly press MENU ▲/▼ to display the "MENU 2" menu, and press MENU ▲/▼ to select BLUE BACK.



2. Press MENU –/+ to select "ON" or "OFF".



ON:
Activates the Blue Back.
OFF:
Cancels the Blue Back.

Notes:

- To view a broadcast even when the reception signal is poor, set the Blue Back to OFF.
- Even when the Blue Back is set to OFF, the sound may not be audible.
- The Blue Back function does not operate in VIDEO mode.

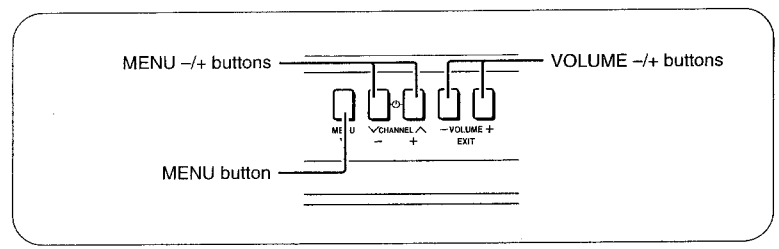
3. Press DISPLAY to turn the display off.

Menu operations using the buttons on the TV

You can operate functions in menus using the front control buttons on the TV without having to use the remote control.

Condition:

- Check to make sure the Child Lock function is set to OFF. When the Child Lock function is set to ON, the TV cannot be operated using the front control buttons. For details, see "Child Lock" on page 21.



1. Press MENU to display the menu.

If the desired menu is not displayed:
Repeatedly press the MENU button until the desired menu is displayed.

2. Repeatedly press MENU to select the desired function or item.

To select a function or item above the currently selected function or menu:
Repeatedly press the MENU button to proceed to another menu, and then repeatedly press the MENU button again to return to the original menu. Then select the function or item.

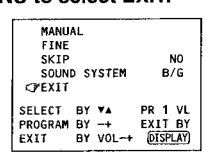
3. Press MENU –/+ or VOLUME –/+ to carry out the desired operation.

- For details, see the description for the respective function.

4. Press VOLUME –/+ to turn the menu display off.

If the sub-menu is displayed:
The sub-menu cannot be turned off by the VOLUME –/+ button when it is displayed. Follow the procedure below to turn the sub-menu display off.

1. Press MENU to select EXIT.



2. Press VOLUME –/+ to turn the sub-menu display off.

Troubleshooting

Important: Review all the instructions in this manual.

Problem	Check/Action
Cannot turn TV on.	Press the Main power button (see p.7). Insert the power plug in an AC outlet.
No picture nor sound.	Press the TV/VIDEO button to select the correct mode (see p.15). Check the aerial connections.
Remote control inoperable.	Replace the batteries (see p.7).
Buttons on front of TV do not work.	Is the Child Lock function ON? (see p.21).
The TV turns on suddenly.	The TV will automatically turn on when the On Timer is operated (see p.19).
The TV turns off suddenly.	The TV will automatically turn off in the following cases. • When the Off Timer or Auto Shutoff is operated (see p.18 and p.22). • When no operations are made within approximately two hours after the TV was turned on with the On Timer (see p.20).
Abnormal sound	Select the appropriate sound system (see p.16).
Abnormal colour	Adjust the colour and brightness (see p.17). Select the appropriate colour system (see p.16). Set the Picture mode to STANDARD (see p.16).
Lines or streaks in picture (interference)	Move the components apart until the interference disappears. Reposition the aerial.
Spotted picture (crosstalk)	Move the aerial away from the source of interference. Replace the aerial cable with a coaxial cable, which is less prone to interference.
Double picture (ghost)	Reposition the aerial. Replace with an aerial with good directionality.
Snowy picture (image noise)	Check the aerial connection and aim it correctly. Replace or repair the aerial.
The TV channel changes suddenly.	The channel will automatically be changed when the On Timer operates (see p.20).
The screen turns blue.	Is the Blue Back set to ON? (see p.22).

The following are normal occurrences and are not the result of TV malfunctions:

- When you touch the CRT surface, you might feel a slight charge of static electricity. This is because the CRT contains static electricity; it does not affect the human body.
- Your TV may emit a crackling sound due to a sudden change in temperature. There is no problem unless the picture or sound is abnormal.
- When a still bright image (of a white dress, for example) appears on the screen, the image may be coloured. This problem occurs in all CRTs, and when the bright image disappears, the colouration also disappears.
- This TV is equipped with a microcomputer that may operate abnormally due to interference from external devices. If this happens, press the Main power button to turn the main power off and disconnect the power plug from the AC outlet. Then, reconnect the power plug to the AC outlet and press the Main power button again.

Specifications

Model	AV-1433EE	AV-2113EE	AV-2133EE
TV RF systems	B, G, I, D, K, K1		
Colour systems	PAL, SECAM, NTSC 3.58 / 4.43 MHz (in VIDEO mode only)		
Channel and frequencies	VHF low channel (VL) = 46.25 to 168.25 MHz VHF high channel (VH) = 175.25 to 463.25 MHz UHF channel (U) = 471.25 to 863.25 MHz ■ Receives cable channels in mid band (X to Z, S1 to S10), super band (S11 to S20) and hyper band (S21 to S41) .		
Power input	AC110 to 240 V, 50 / 60 Hz		
Power consumption	Maximum 70 W Average 47 W	Maximum 100 W Average 67 W	
Screen size (measured diagonally)	Picture tube 36 cm Visible area 34 cm	Picture tube 55 cm Visible area 51 cm	
Audio output (Rated power output)	3W (monaural)	5W (monaural)	
Speakers	(5 cm × 9 cm) oval × 2		(6 cm × 12 cm) oval × 2
External input / output	VIDEO input (RCA) AUDIO input (RCA)		
	VIDEO output (RCA) AUDIO output (RCA)		
	Headphone jack: mini jack (dia. 3.5 mm)		
Dimensions (W × H × D)	462 mm × 341 mm × 375 mm	502 mm × 451 mm × 481 mm	619 mm × 458 mm × 486.5 mm
Weight	9.9 kg	19.5 kg	22 kg
Accessories	• Remote control unit: RM-C360 × 1 • AA / R6 / UM-3 dry cell battery × 2 • Rod aerial × 1	• Remote control unit: RM-C364 × 1 • AA / R6 / UM-3 dry cell battery × 2	

Design and specifications subject to change without notice.